ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

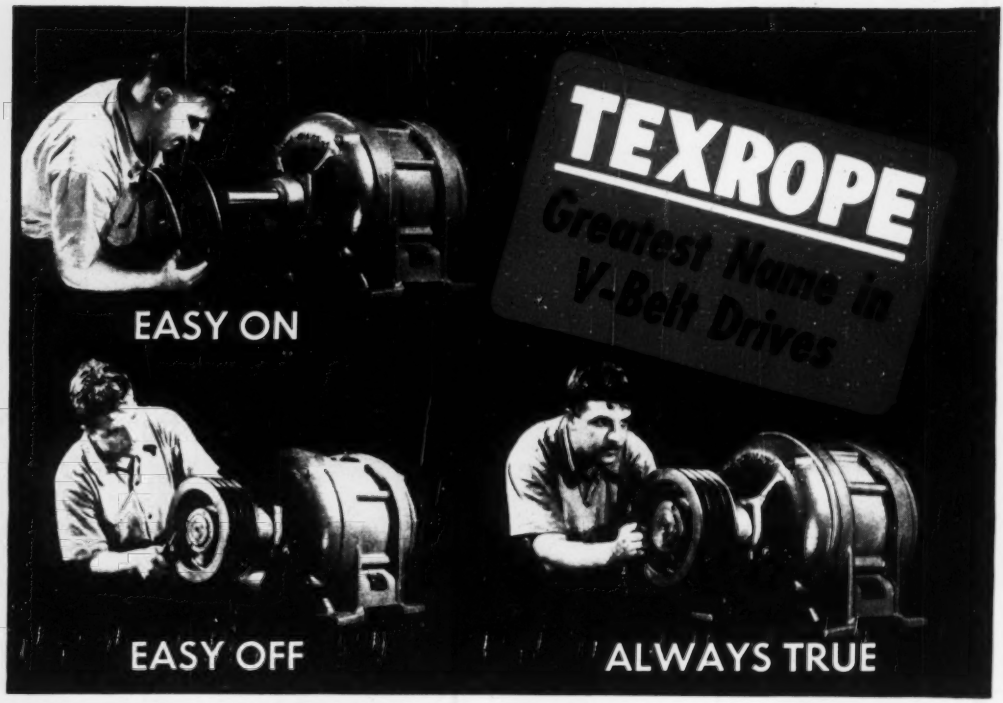
DECEMBER 15, 1949

Heavy wooden sheathing is used to protect upstream face of small Canadian dam (see p. 14)

SAVING LAGUARDIA AIRPORT

• • •

TABULATED STRESSES SAVE TIME



Save Mounting Time

With *Easy-to-Align* Magic-Grip SHEAVES

YOU CAN MOUNT a *Magic-Grip* sheave faster than any other sheave you can buy . . . and demount it just as fast. To mount, simply slide the sheave onto the shaft and tighten three screws. To demount, use the screws to break the grip of the tapered bushing and the sheave can be slid off easily.

You save time and eliminate the danger of damaged bearings and shafts from forcing and hammering. A hex socket wrench is the only tool needed and anyone can line up the sheave perfectly. Sizes 1 to 250 hp.

Most Complete V-belt Line

Get everything you need for your V-belt drives from one reliable source. *Texrope* offers the broadest line of V-belts, standard and variable-speed sheaves and speed changers plus the extra engineering skill that comes from more industrial V-belt installations in operation than any other manufacturer.

Get your copy of the 144 page *Texrope* Pre-Engineered Drive Manual from your A-C Authorized Dealer or Sales Office or write for Bulletin 20B6956. Also in Sweet's.

ALLIS-CHALMERS, 1018A SO. 70 ST.
MILWAUKEE, WIS.

A-2855

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.

MOTORS — ½ to 25,000 hp and up. All types.

CONTROL — Manual, magnetic and combination starters, push button stations and components for complete control systems.

PUMPS — Integral motor and coupled types. Sizes and ratings to 2500 GPM.

Texrope and *Magic-Grip* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

No. 3 of a Series

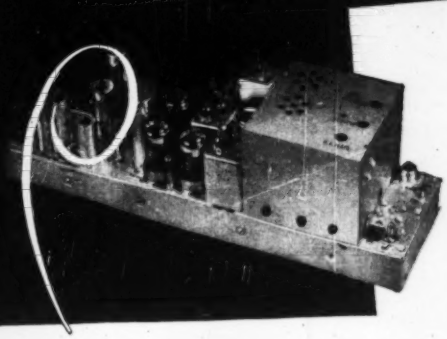
Motorola "RESEARCH" LINE...

SPECIALISTS in the field of mobile radio for 20 years now offer you . . .

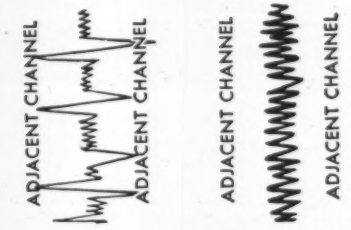
I.D.C. for the BEST IN 2-WAY RADIO

INSTANTANEOUS I.D.C. DEVIATION CONTROL

A MUST IN ALL ADJACENT CHANNEL SYSTEMS



INSTANTANEOUS CARRIER DEVIATION



WITHOUT I.D.C.

1. Unlawful overmodulation.
2. Interference with channel neighbors.
3. Loss of speech intelligibility on weak signals.
4. Decreased average percent modulation.

WITH I.D.C.

1. Instantaneous automatic limiting of modulation deviations.
2. Maximum protection of channel neighbors.
3. Preservation of speech intelligibility for signals both strong and weak.
4. Increased average percent modulation.

Compare Feature for Feature with any other equipment on the market. Get the complete story . . . . Write today.

MOTOROLA INC.
Communications & Electronics Division
4545 W. AUGUSTA BLVD. • CHICAGO 51, ILLINOIS

Now there's

INSTANTANEOUS I.D.C. DEVIATION CONTROL

IN THE MOST MODERN, EFFICIENT AND EFFECTIVE COMMUNICATIONS EQUIPMENT YOU CAN OWN!

Even better than ever before! *Proved* by past performance —now *improved* through specialized experience. Customer reports are unanimous in acclaiming Motorola's superior performance, endurance and freedom from obsolescence: Proof that top quality costs *you* less in the long run.

I.D.C. A revolutionary, voice wave slope-limiter invented by Motorola Engineers to improve the utility of 2-way radio: eliminates channel "spillover"—protects communication's intelligibility—increases the voice dominance over noise and keeps radiated power within useful channel limits.

I.D.C. A symbol of Motorola's continued leadership. Instantaneous Deviation Control satisfies the FCC, July 1, 1950 modulation control regulation.

I.D.C. A pace setting development of the Motorola Research Laboratories, the world's largest laboratories devoted exclusively to the development of F.M. 2-way radio equipment.

Motorola

"RESEARCH" LINE

F M 2-WAY RADIO

THE BEST COSTS LESS IN THE LONG RUN!

LEUPOLD
Engineered
PRECISION

HAND
LEVEL

Saves
...TIME
...MONEY

Insure against costly errors due to inadequate equipment. Insist upon Leupold & Stevens Instruments . . . tested, approved and used by engineers the world over for more than 42 years. When you buy Leupold & Stevens products you are assured the finest modern research and manufacturing can produce.

The Leupold Hand Level is precision built for a lifetime of service. Only the Leupold Hand Level has all these features:

- *Internal Focus.* When perfect focus on bubble is obtained for your eye, adjustment is locked in place; no need to re-focus every time level is used.
- Streamline design.
- Baked enamel finish with gun metal trim.
- 5½ in. long x ¾ in. diameter.

Price $10.50 . . . includes handsome saddle leather case. If your local dealer cannot supply you, order direct from Leupold & Stevens Instruments. Money-back guarantee.

Write for literature on complete line of Leupold Instruments.

L&S INSTRUMENTS

LEUPOLD & STEVENS INSTRUMENTS
PORTLAND 13, OREGON

ENGINEERING NEWS-RECORD

VOLUME 143 DECEMBER 15, 1949 NO. 24

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Speeding Up San Antonio Traffic 32
Saving LaGuardia Airport 35
Tabulated Stresses Save Design Time ..... J. B. Scalzi 38
Concrete Plant Can Put Out 2,000 Yards a Day 42

DEPARTMENTS

Construction Week 17
Construction Trends 19
Editorials 21
News of the Week 23
Book Notes and Reviews 43
Developments Abroad 46
Municipal Affairs 49
Men and Jobs 50
Obituaries 52
Elections and Activities 54
Education and Research 55
Unit Prices 56
Construction Reports 58
New Products 78
Reader Comment 88

Number of copies of this issue printed . 44,708

Managing Editor—Eugene E. Hatmos, Jr.
Associate Editors—*New York*, V. T. Boughton, (senior associate), F. S. Merritt, R. H. Dodds, J. C. Bumstead, R. N. Larkin; *Cleveland*, J. R. Carr; *Chicago*, H. T. Perez; *San Francisco*, N. A. Bowers; *Washington*, V. B. Smith.

Assistant Editors—*New York*, T. D. MacGregor, Arthur J. Fox, Jr., Melvin Dean; *San Francisco*, L. L. Wise.

Contributing Editor—Edward J. Cleary.

Business News—Elsie Eaves, *Manager*; J. A. Mahoney, Robert F. Westervelt, M. W. Roessler, M. Wetzel, E. M. Huber, Jane Lucia.

Staff Assistants—Ethel Lyon, Louise Barker, Madalene Smith, Henry Lefer, Behri Pratt, Ruth Imler.

Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfort, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

Member ABC Member ABP

December 15, 1949 ENGINEERING NEWS-RECORD Vol. 143—No. 24

Publication Office—99-129 N. Broadway, Albany 1, N. Y.
Executive and Editorial Offices—330 West 42nd St., New York 18, N. Y.

Copyright 1949 by McGraw-Hill Publishing Co., Inc. All rights reserved. Published every Thursday by the McGraw-Hill Publishing Co., Inc.; James H. McGraw (1860-1948), founder; JAMES H. McGRAW, JR., President; CURTIS W. McGRAW, Senior Vice-President and Treasurer; JOSEPH A. GERARDI, Secretary; NELSON BOND, Vice-President and Director of Advertising; EUGENE DUFFIELD, Senior Vice President, Publications Division; J. E. BLACKBURN, JR., Vice President and Director of Circulation. Cable address, "McGraw-Hill New York."

Subscriptions: of 1 yr., 2 yr., 3 yr.: U. S. and possessions $6, $9, $12; Pan America, $10, $16, $20; Canada, $8, $12, $16; All others, $20, $30, $40.

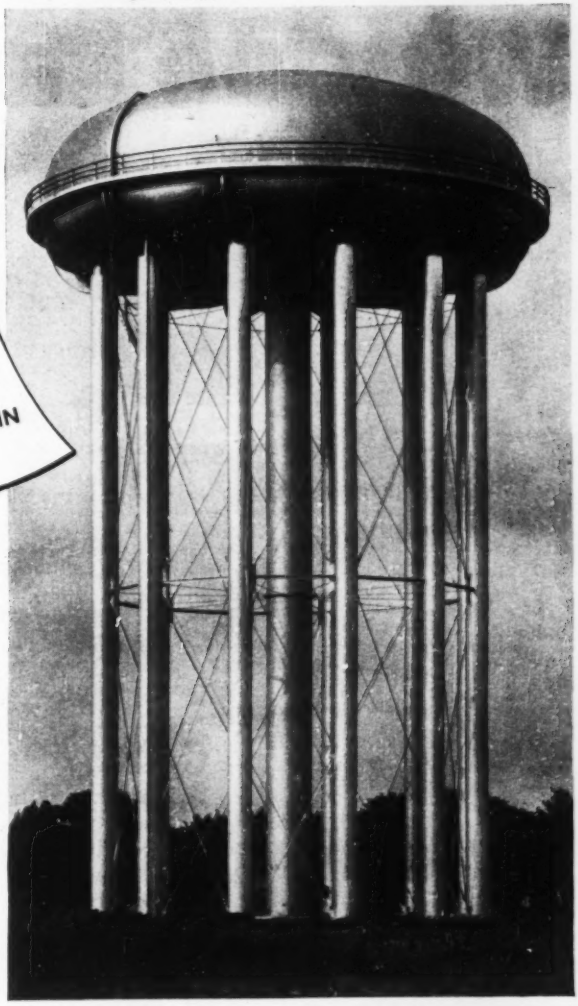
Address all communications about subscriptions to Director of Circulation. Price 35c per copy.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

"... our experience with raising pressures has been most successful" ...

RALPH CAHILL
VILLAGE COMMISSIONER
WHITEFISH BAY, WISCONSIN



Horton elevated tank solves pressure problems of well-known suburb . . .

The commissioner's remarks are significant because they are concerned with a problem that could confront the officials of any community. The residents of this attractive suburb north of Milwaukee take pride in maintaining the appearance of their property—as do suburban residents all over America. They use a great deal of water in the summer for lawn sprinkling—which made it difficult to maintain uniform pressures in the village water mains.

To solve the problem, the 1,000,000-gal. Horton welded radial-cone bottom elevated tank, shown at the right, was erected. It was installed at a location farthest from the point where water pumped from the City of Milwaukee system enters the village. Because of its location, this Horton tank, supplying the mains by gravity pressure, produces ideal back-feeding—thereby raising pressure in former weak areas.

This is just one example of the way in which municipalities are utilizing Horton radial-cone bottom tanks. Built in capacities from 500,000 to 3,000,000 gals., these modern welded elevated storage tanks provide the answer to better water service for hundreds of similar installations.

ENGINEERING DATA FOR WHITEFISH BAY . . .

Population Served—14,000
Area Served—2.1 square miles
Miles of Distribution Mains—17.2
Per Capita Consumption—105 gals. per day
Other Storage in System—None

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3 . . . . . 2125 Healey Building
Birmingham, 1 . . . . . 1520 North 50th Street
Boston, 10 . . . . . 1012—201 Devonshire Street
Chicago, 4 . . . . . 2101 McCormick Building
Cleveland, 15 . . . . . 2201 Guildhall Building
Detroit, 26 . . . . . 1506 Lafayette Building
Houston, 2 . . . . . 2109 National Standard Building
Havana . . . . . 402 Abreu Building
Los Angeles, 14 . . 1511 General Petroleum Building
New York, 6 . . . . . 3311—165 Broadway Building
Philadelphia, 3 . . 1623—1700 Walnut St. Building
Salt Lake City, 1 . . 1512 1st Security Bank Building
San Francisco, 11 . . . 1220—22 Battery St. Building
Seattle, 1 . . . . . 1312 Henry Building
Tulsa, 3 . . . . . 1617 Hunt Building

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE

In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, ONT.

Why do taxpayers

Our advertisement in the November 7th issue of "Time" had this headline: Taxpayers *love that pipe!* We then went on to tell "Time's" 4½ million readers that "cast iron pipe has saved, and is now saving, millions of tax dollars because of its long life."

How were we justified in making that statement? This is how! The public has an important stake in the economical operation of water supply, gas distribution and sewerage systems as reflected in taxes, or assessments or rates (taxes in another form). By avoided replacements of mains, which would have been necessary with shorter-lived pipe, cast iron pipe has saved the public many millions of dollars in direct or indirect taxes. Generations after the bonds, issued to pay for the mains, have been retired and forgotten, cast iron mains will still be in service. Ask the 30 cities in the United States and Canada that have cast iron water or gas mains in service that were installed from 100 to 130 years ago!

96%
OF ALL 6-INCH AND LARGER CAST IRON WATER MAINS EVER LAID IN 28 REPRESENTATIVE CITIES ARE STILL IN SERVICE.
Based on the findings of a survey conducted by leading water works engineers.

Cast Iron Pipe Research Association,
T. F. Wolfe, Engineer, 122 So. Michigan Ave., Chicago 3.

CAST IRON PIPE

"love that pipe"?

SERVES FOR CENTURIES

GA Since 1905

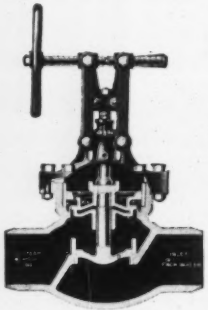
known for

Quality and Dependability

GOLDEN-ANDERSON POSITIVE CONTROL

Valves GA

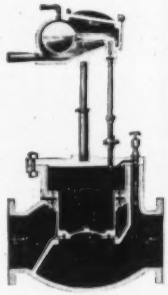
For every Service



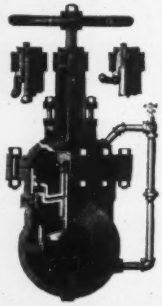
G-A Single Acting Non-Return Valve, Toggle Yoke Design, Globe Pattern

- Non-Return Valves
- Throttle and Automatic Engine Stop Valves
- Emergency Trip Valves
- Steam and Water Pressure Reducing Valves
- Pressure Reducing and Sustaining Valves
- Pressure Reducing and Relief Valves
- Pressure Reducing and Check Valves
- Water Pressure Relief Valves
- Altitude Control Valves
- Float Operated Control Valves
- Water Service Valves
- Coke Quenching Valves
- Counter-Balanced Railroad Standpipe Valves

• and many other types for every service



G-A High Pressure Controlling Float Valve, Globe Pattern



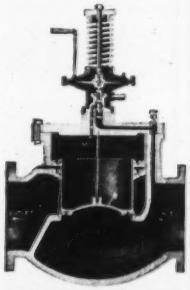
G-A Combined Throttle and Automatic Engine Stop Valve, Globe Pattern

Since 1905 Golden-Anderson has furnished dependable automatic control valves for some of America's most important Industrial and Power Plant applications. Choose from more than 1500 standard types, or specially designed valves to solve your most difficult *flow control* problem. Write for descriptive catalog.

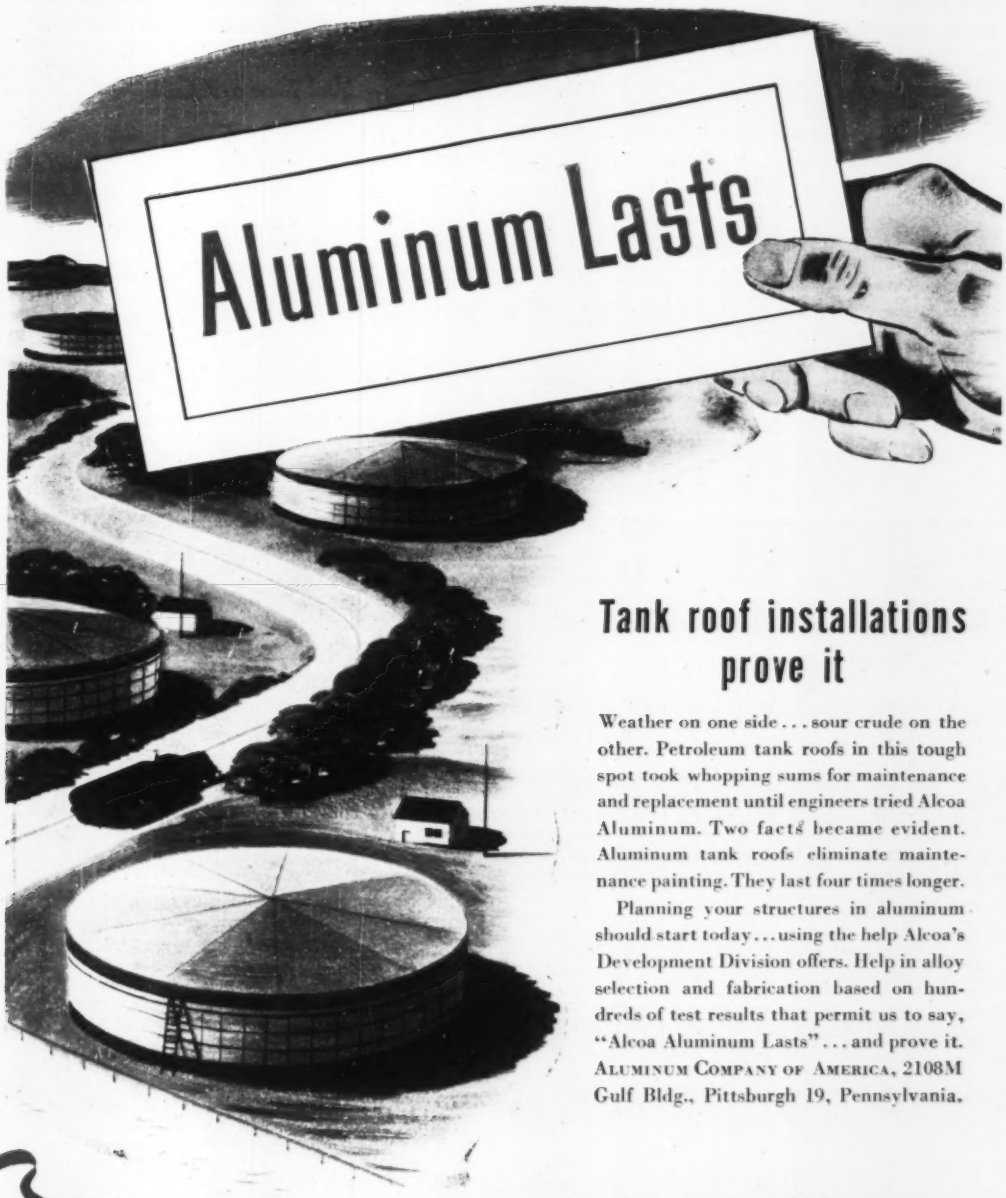
LIFE AND PROPERTY PROTECTION
VALVES SINCE 1905

GOLDEN-ANDERSON
Valve SPECIALTY CO.

Keenan Bldg., Pittsburgh 22, Pa.



G-A Single Acting Altitude Valve, Globe Pattern



Tank roof installations prove it

Weather on one side . . . sour crude on the other. Petroleum tank roofs in this tough spot took whopping sums for maintenance and replacement until engineers tried Alcoa Aluminum. Two facts became evident. Aluminum tank roofs eliminate maintenance painting. They last four times longer.

Planning your structures in aluminum should start today . . . using the help Alcoa's Development Division offers. Help in alloy selection and fabrication based on hundreds of test results that permit us to say, "Alcoa Aluminum Lasts" . . . and prove it. ALUMINUM COMPANY OF AMERICA, 2108M Gulf Bldg., Pittsburgh 19, Pennsylvania.

ALCOA

FIRST IN ALUMINUM

THE METAL THAT LASTS

ALCOA ALUMINUM ®

INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS
ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS

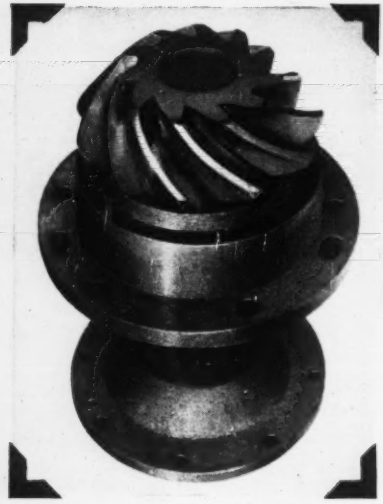
STANDARD ENGINEER'S REPORT

RPM

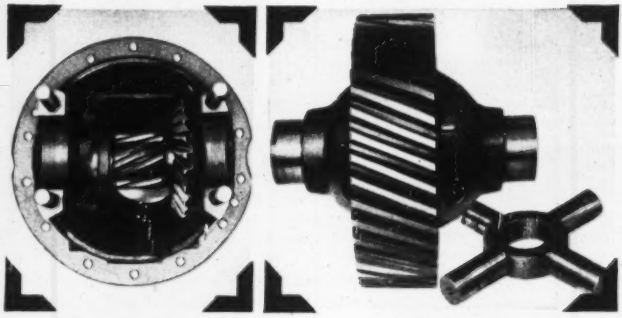
TEST DATA

LUBRICANT	RPM-Multi-Service Gear Lubr.
UNIT	"Semi" Truck and Trailer
PART	Final Drive-Timken U-200 Axle
CONDITIONS	Long-distance freight haul-road elev. 0 to 7200 ft.-weather-20° to 125° F.
LOCATION	Los Angeles-Albuquerque, N.M.
FIRM	Illinois-California Express Co, L.A.

Hypoid gears in good condition after 192,000 Miles!



RPM Multi-Service Gear Lubricant was used exclusively in the final drive from which this hypoid pinion was pulled—319,270 miles since it was new and 192,000 miles since last overhaul. As photo above indicates, none of the gears was worn enough to warrant replacement.



These pictures show other gears from the final drive when they were removed for the 192,000 mile inspection. Note their excellent condition, despite service on the highway in extremes of load and weather conditions. All were put back in service. The rear end was only taken down because there was time to do so when the unit was in the shop for engine service. It was in service 13,000-14,000 miles a month. Drain and refill period was about 35,000 miles. The average gross load for the transport unit was 68,000 pounds. RPM Multi-Service Gear Lubricant provides longer gear life under heavy-duty service. It is highly resistant to oxidation. It is rust-inhibited and also compounded to stop foaming—prevent operational problems like loss of lubricant through leakage, damage to lubricant seals and saturation of brake linings by oil.

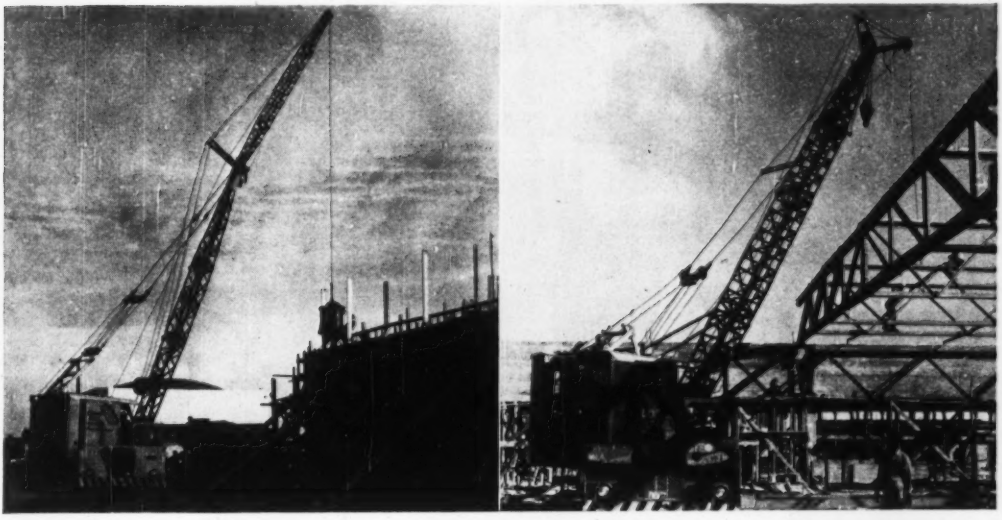
REMARKS: This final drive was in a unit used over a desert and mountain route in all kinds of weather—rain, heat, ice and snow. Atmospheric temperatures ranged from sub-zero to 125° F. The round-trip haul was 1650 miles and truck speed averaged 35 miles per hour. The route passes from below sea level at Indio, California to 7200 feet at Prescott, Arizona, and several intervening grades rise 2000 feet in less than 10 miles. RPM Multi-Service Gear Lubricant is specially compounded for satisfactory service under all operating conditions. It contains a chemical additive which reacts with metal to put a tough lubricating film on gears—protect against friction-welding and scoring. It adheres to vital gear tooth wear surfaces and withstands the sliding action and extreme pressure of hypoids under overload, shock load and low speed-high load operation.

STANDARD OIL COMPANY OF CALIFORNIA • San Francisco
THE CALIFORNIA OIL COMPANY • Barber N.J., Chicago, New Orleans
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA COMPANY • Denver, Colorado

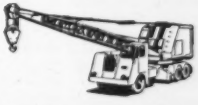
BAY CITY CRANEMOBILE handles a variety of jobs . . . *quickly!*

Whether handling concrete or setting steel, a BAY CITY CraneMobile is a versatile machine on any construction job. At the left, a model 180 CraneMobile with 20-ton capacity, is speeding form pouring for Schmidt Bros., of Long Beach, California, while at the right, the Model 150 CraneMobile having 10-ton capacity is setting steel quickly and easily on a Florida job for Dickinson Steel Erecting. Big capacity, long booms and jibs and plenty of power . . . CraneMobile handles ANY job in less time.

Operators like the BAY CITY quick responsive swing and booster type clutches that mean smooth, positive operation at all times. Sound engineering plus rugged construction means steady day-in, day-out high performance without costly "down-time" for repairs. From every angle CraneMobile is a better buy. Write, wire, or phone for facts today.



BAY CITY



SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN See your nearest Bay City dealer for excavating and material handling equipment in sizes from ⅜ to 1¼ yard with crane rating up to 20 tons. Both crawler and pneumatic tire mountings.

MY!... BUT SUCCESS

(Portrait of a growing family)

If you study the picture above, you'll notice a certain family resemblance . . .

There's Awful Friendly, Plenty Friendly, Utterly Friendly and a flock of others whose names slip me now.

You see the American Mutual family has grown so rapidly in the last 4 years, even I'm amazed!

In this short period, we've practically doubled the amount of business we do! (And we were up among the leaders to begin with.)

I say this, not to brag . . . but to let you know that when you join the American Mutual family as a policyholder, you're signing up with one of the healthiest companies in America today!

Why did almost *twice* as many people come to us for protection recently? . . .

Because we offered them the chance to get *a dollar's worth of protection for 80 cents* in almost every case.

Because our special Specialized Engineering Construction Service, which we feel is the greatest extra in insurance, has

AMERICAN MUTUAL...*the first American liability insurance company*

© 1949 AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

CERTAINLY BREEDS!

by Mr. Friendly

demonstrated year after year that we can help businessmen reduce costly accidents, and increase plant efficiency and profit at the same time!

Because we've helped cut premium costs for hundreds of companies to way below the average for their field! (As much as 50% below average in some cases.)

The point is . . . we'd like to have you join our big Friendly family. We'd like to help you in every way.

And personally, I get a kick out of being head of a family with thousands and thousands of new members every year.

Beats quintuplets any day!

— — MAIL THIS COUPON NOW—WITHOUT DELAY! — —

Dept. O-88, American Mutual Liability Insurance Company
142 Berkeley Street, Boston 16, Massachusetts

Without obligation, please *rush* to me more information on the All-American Plan so that I may be richer and happier!

*Name*_____

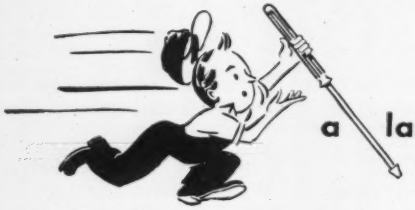
*Street*_____

*City*_____ *State*_____

Here's all you need to repair a KENNEDY SAFETOP after collision damage...

Only one man with

a socket wrench



a large screwdriver

a light sledge hammer

one collision breakage repair kit (breaking ring, coupling, 2 pins, gasket)

and 30 minutes

More and more communities standardize on KENNEDY SAFETOP Fire Hydrants because SAFETOPS are proved dependable under the most rigorous conditions . . . and because SAFETOP maintenance and repair features are simplified for greater economy and efficiency.

Write for Bulletin 62 describing *all* the details of the KENNEDY SAFETOP'S design and construction. No obligation!

THE KENNEDY VALVE MFG. CO.
1066 EAST WATER ST.
ELMIRA, NEW YORK
VALVES • PIPE FITTINGS • FIRE HYDRANTS

OFFICE-WAREHOUSES IN NEW YORK, CHICAGO, SAN FRANCISCO • SALES REPRESENTATIVES IN PRINCIPAL CITIES

NEWS BRIEFS

No Tolls?—Southern Californians are pushing for a 34-mi. tunnel through the Laguna Mountains, between San Diego and the Imperial Valley. They say it would: Cut the distance between San Diego and El Centro by 35 mi.; carry cars, trucks and railroads through the hills; provide a conduit for communications, water and gas lines; provide underground factory space for an atomic war. It would cost $120 million.

Cheap Rent—New York State Housing Commissioner Herman Stichman has approved plans for the sixth cooperative housing project in New York City. This one, sponsored in Brooklyn by an AFL union, will accommodate 288 lower-middle income families, cost $2,823,000. Rents will run from $52.95 for three and one-half rooms to $74.97 for five and one-half rooms. Stichman says equivalent private housing rents at figures 50 percent greater

Need a Job?—Reclamation Bureau says there's a shortage of inspectors for general construction work in North and South Dakota, Wyoming and Montana. With USBR expanding its program in these states, the shortage is expected to worsen. Civil Service Commission, at Denver, is examining candidates for such positions. Three salary grades, from $3,100 to $3,825, are included in present openings for which candidates are sought.

There's a Lot to Do—Philadelphia's Redevelopment Authority wants federal approval of seven proposed slum clearance projects. Their estimated total cost is $13,267,650. It wants $6,000,000 now for acquisition costs and two years of development work.

Watch It Grow—Reclamation Bureau's Hungry Horse Dam is expected to rise about one foot daily during next year's construction season. The contractor expects to pour concrete at an average rate of 5,000 yd. daily, place 1,000,000 cu. yd. over the season. There'll be another 1,000,000 cu. yd. to be poured in 1951 and final completion in 1952.

Wanted: $180 Million—A Montreal study group has reported to City Council that solution of the city's traffic problem will require a 15-mi. subway, an east-west expressway through the city, and a Transportation Authority to control all public trans-

(Continued on page 14)

SO FRICTIONLESS

—that even a sensitive stethoscope can't detect the slightest scratching of your fingernail!

CHRYSLER SUPERFINISH

. . . the Chrysler-developed method of surface finishing vital engine parts, *comes closer to eliminating friction and wear than any finishing method ever devised!*

Superfinishing removes the surface roughness left by machining. It produces an almost unbelievable mirror smoothness—far beyond the limits of grinding, honing or lapping. What is left is actually *polished base metal.*

Superfinished parts fit closer. They wear longer. They perform better. They prevent excessive loosening and surface scratching which causes loss of power and efficiency. That means greater utilization of the advantages that come from higher speeds and higher compression ratios.

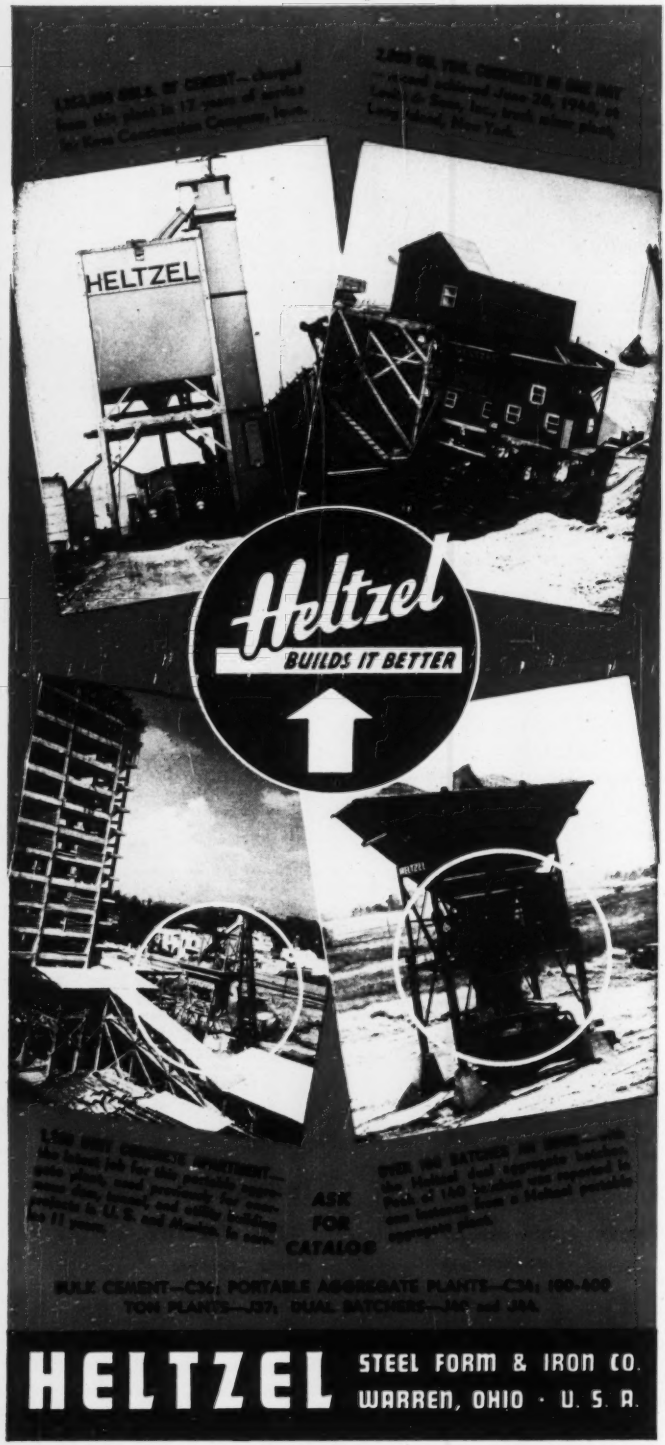
All friction surfaces in Chrysler Industrial Engines are superfinished. And there you have one of the big reasons why Chrysler Industrial Engines are out-performing, out-lasting and out-economizing similarly rated engines on all sorts of jobs everywhere.

It pays to power and re-power with a Chrysler. See your Chrysler Industrial Engine Dealer or write us. Parts and service quickly available. ***Industrial Engine Division, Chrysler Corporation, Detroit 31, Mich.***

CHRYSLER

Industrial Engines and Power Units

HORSEPOWER WITH A PEDIGREE



(Continued from page 12)

port. Subway cost is estimated at $180 million, the expressway—through the port area—at $60,000,000. Other recommendations include three large parking garages and many street widenings.

Maybe It's the Traffic—Indiana's Gov. Henry F. Schricker has asked the Highway Commission to plan a test highway where studies may be made to see why the state's roads break up so fast. Schricker suggested a macadam strip "to see how it stands up compared to newer paved roads." The location and length of the test strip has not been given to the general public.

Easy to Remedy—Canada's Engineering Institute opposes employment of foreign engineers on Canadian work. Its president, J. E. Armstrong, says many young engineers find their best way to get good-paying jobs in the Dominion is to go to the United States for work, then be sent back to handle jobs being performed there by successful bidders from the various U. S. organizations.

It Needs One, Anyway—Civil Aeronautics Authority has unfrozen $400,000 it had allocated for drainage work at the Houston, Tex., airport. As a result, work can now be resumed toward making the north end of the field usable. In unfreezing the funds it pledged, then withheld, some months ago, CAA didn't say whether it still thought the city must have a second airport. This contention was the contributing factor to the controversy originally.

THE COVER

Faced with heavy timbers as protection against the grinding of heavy winter ice formations, $3,500,000 Lajoie Dam is almost ready for service as a part of British Columbia Electric Company's Bridge River hydro project.

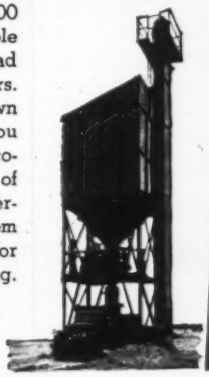
Two years in the building, the structure is a rock-filled, concrete lined dam, 1,400 ft. long, 200 ft. high and 470 ft. wide at the base. Its storage capacity of 175,000 acre-ft. will be moved through two 14-ft. dia. tunnels a distance of 600 ft. to supply head for year-round operation of the company's first three 45,000 kw. units. When two additional power units are installed, Lajoie dam will be enlarged to a maximum height of 277 ft. and a length of 3,300 ft. to store 570,000 acre-ft. of water.

General contractors for the work were Northern Construction Co. and J. W. Stewart, Ltd.

Tonight do this . . .

Figure what a bag of cement *really* costs you !

There are hundreds of contractors and ready-mix operators who continue to handle bag cement because they have not figured its complete cost. They are not familiar with the line of Erie Portable Cement Handling Plants (172 bbl. to 600 bbl. capacity) and Semi Portable Bins of larger capacity that unload bulk cement from gondola cars. These plants can be knocked-down and moved to the job and give you that big advantage that fast, economical and accurate handling of bulk cement gives to larger operators. Let's have your problem and we'll show you how to pay for it out of savings over bag handling.



1. Estimate difference in first cost. Bag vs. Bulk. Jot it down . . . . . _____

2. Estimate cost of unloading Bags.
$\frac{\text{No. of sacks}}{\text{Man hours}}$ x hourly rate = _____

3. Estimate cost of charging Truck Mixer.
$\frac{\text{No. of sacks}}{\text{Man hours}}$ x (hourly rate of men + Mixer @ $6.00 /hr.) . . _____

Your mixer time is worth say about $6.00 /hr. and the rent it takes to charge it with bag cement should be computed. Bulk Cement batching is fast and accurate.

4. Estimate cost of Loading Sheds—you won't need them with bulk handling. . . . . _____

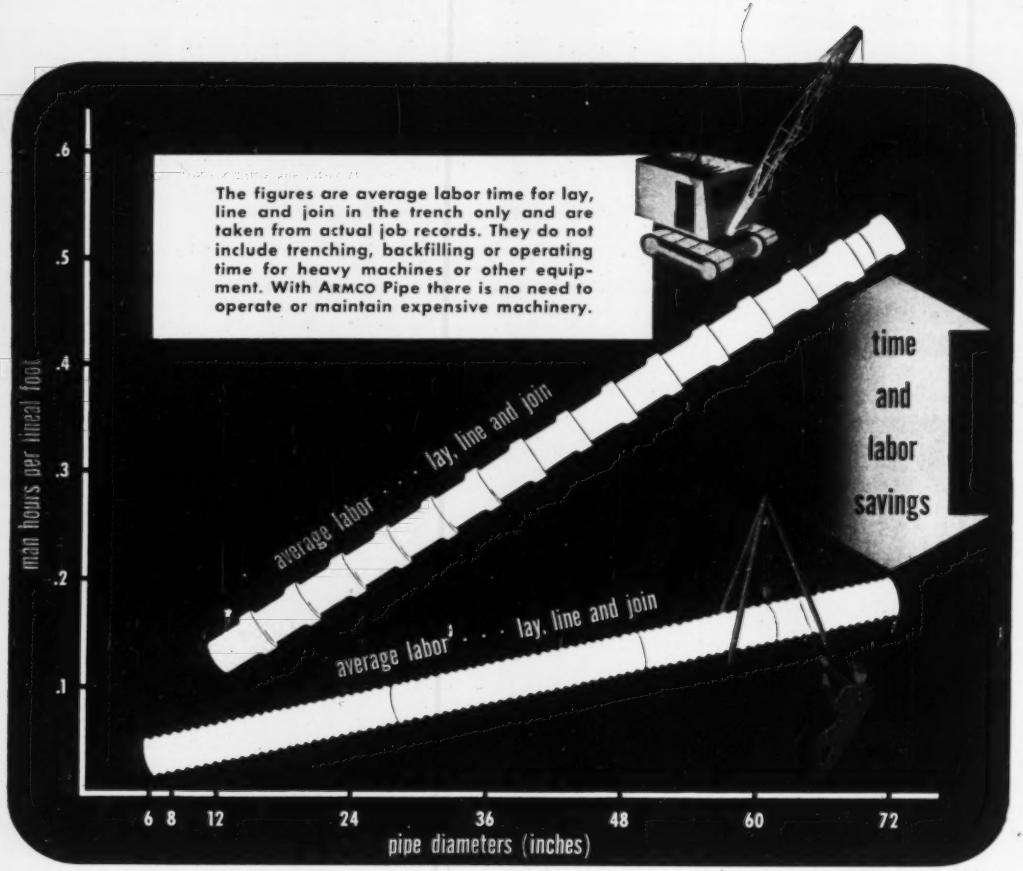
5. You cannot figure how much you lose by guessing or splitting bags. Write in Total

and tomorrow . . . send for data and Catalog

ERIE

STEEL CONSTRUCTION COMPANY

1912 GEIST ROAD • ERIE, PENNSYLVANIA


The figures are average labor time for lay, line and join in the trench only and are taken from actual job records. They do not include trenching, backfilling or operating time for heavy machines or other equipment. With ARMCO Pipe there is no need to operate or maintain expensive machinery.
man hours per lineal foot
.6
.5
.4
.3
.2
.1
average labor . . . lay, line and join
average labor . . . lay, line and join
time and labor savings
6 8 12 24 36 48 60 72
pipe diameters (inches)

"Sweeten" your bids with lower labor costs

As a contractor, why not give yourself a break and do that next drainage job with ARMCO Corrugated Pipe. Thousands of installations prove it is easier to handle and install — saves you time, labor and money. You pocket the difference.

Savings start the minute you begin to haul or handle ARMCO Pipe. Although amply strong it often weighs only one-tenth as much as more massive types. A few unskilled men quickly make the installation without special equipment. Trenches need only be wide enough for men to work since there are no bells or massive joints that require extra digging. Using simple band couplers, it takes only a surprisingly short time to join individual lengths — 20 feet or longer — into a tight, sturdy conduit. Long, straight lengths make it easy to maintain line and grade. There is little or no foundation work because ARMCO Pipe has beam strength to span the soft spots. Breakage is no problem in handling or backfilling.

Bid low on that next contract with ARMCO Corrugated Metal Pipe. You will find it ideal for highway, railway, airport or municipal installations. Write for complete data. Armco Drainage & Metal Products, Inc., 445 Curtis Street, Middletown, Ohio. Export: The Armco International Corporation.

ARMCO CORRUGATED METAL PIPE

THE CONSTRUCTION WEEK

OFF THE HOOK?—Prodded by contractors, NLRB, is attempting to solve construction's biggest Taft-Hartley problem: What to do about the union shop? NLRB will try to find out at a conference scheduled for Dec. 19 at Washington. If a solution turns up, no one will be happier than NLRB. Everyone knew when the act was signed that with construction workers changing jobs as easily and often as they do, elections to determine whether they wanted a union shop (as required by T-H) would be too cumbersome. NLRB finally held one election in the Pittsburgh area (ENR May 13, 1948, p. 688) with sad results. Now, contractors are complaining: They've been charged with unfair labor practices, and decisions of their National Joint Board have been challenged by non-AFL unions. That's behind their drive for alternate procedures (ENR Nov. 3, p. 15) that would satisfy the law and give them protection.

P.S.—THE EASY ANSWER—The whole thing could be solved—easily and promptly—if it weren't for the politics it involves. Neither President Truman nor Sen. Taft (any longer) is in favor of union shop elections as required by the act. So it ought to be simple to amend the law and junk this provision. But Democratic strategy has been all or nothing on Taft-Hartley—repeal the whole law, not just correct the defects its GOP authors concede. If this problem were solved so simply now, Taft-Hartley might be a less attractive issue for the Democrats next year, or even in 1952, when a Taft-Truman race might take place.

DOWNTREND?—A downward drift in business spending for plant and equipment—reflected in the latest joint survey of the Securities and Exchange Commission and the Department of Commerce—is developing into a real worry. Total outlays for 1949—now expected to be $17.9 billion—will be off about 7 percent from last year; in the last six months alone, spending for plant and equipment is down 14 percent over the same period of 1948. Only a small part of the drop can be accounted for by lower costs. One bright spot is the spending by utilities—gas and electric companies alone expect to spend 10 percent more in the second half of 1949 than for the comparable period a year ago.

MORE STATE SAY-SO IN MISSOURI BASIN—The long-smouldering resentments of the states in the Missouri Basin area to federal control of the development threatened to burst into real flame last week. Water rights—in this case, the question of how the Missouri's waters shall be allocated to the ten affected states—was the flame-fanning question. Gov. John W. Bonner, of Montana, injected the question into a discussion of power allocation from the dams planned on the river. Angrily, he told a meeting of the Missouri Basin Inter-Agency Committee that the Reclamation Bureau is "bypassing" the states, and presented a resolution urging Congress to prevent any federal agency from allocating any water for any purpose without approval of the state concerned. Gov. Bonner's outburst set off another—this one from Gov. Forrest Smith of Missouri—who demanded an agreement over the question of control of water to be impounded at upstream dams.

ONE WAY OR ANOTHER—Californians who have been trying to junk the Reclamation Bureau's 160-acre limitation report a partial success. The Tulare Irrigation District has concluded a new water contract with the Interior Department which "minimizes" the limitation's effect. Under it, waters developed by USBR's Central Valley Project and by the Tulare District may be "commingled" in the district's canals. Farmers whose holdings exceed the limit can insist they're using Tulare water. Those with smaller holdings can be assigned Central Valley water. There's no way of telling which is which, Tulare officials point out, so the 160-acre limitation is much less real—at least to the farmer who's receiving water for his over-the-limit holdings.

WHO BUILDS ATOMIC PLANTS?—Atomic Energy Commission denies that western contractors are being favored in contract awards for the new reactor testing station at Arco, Idaho. Rumors to this effect probably arise from the fact that, of 21 contracts awarded to date, only two went to non-western firms. Blaw-Knox got one for design of a materials-testing reactor; Aero Service Corp., of Philadelphia, the other, for aerial surveys. AEC points out that about two-thirds of the work will be on a competitive bid basis, in which western firms have an edge by being located nearer the work. On the cost-plus-fixed-fee construction—necessary for some of the more complex work—as many as 159 firms have been considered in detail for one contract. All other things being equal, the firm with the greatest experience in the Mountain States is selected. Thus, western contractors have received more of the contracts, even though AEC makes every effort to be impartial in awarding them.

Leader in Value . . . Leader in Registrations

CHEVROLET ADVANCE-DESIGN TRUCKS

CHEVROLET American truck owners recognize the superiority of Chevrolet Advance-Design trucks . . . and buy more Chevrolets than the next two makes combined! They turn to Chevrolet for extra value—for stamina, economy and long-life dependability. They know Chevrolet trucks are easy to handle . . . speedy and high-powered on the highway. Moreover, Chevrolets alone give unsurpassed 3-WAY THRIFT—lower cost of operation, lower cost of upkeep, and the lowest list prices in the entire truck field. Chevrolet trucks are *right* on the job . . . leaders in value—leaders in registrations all over America. See your Chevrolet dealer—for full details.

CHEVROLET MOTOR DIVISION, *General Motors Corporation*, DETROIT 2, MICHIGAN

TOP-VOLUME PRODUCTION BRINGS YOU TOP-VALUE FEATURES!

Chevrolet's new 4-SPEED SYNCHRO-MESH TRANSMISSION offers quicker, quieter and easier operation. Double clutching is eliminated. Faster shifting maintains speed and momentum on grades. In Series 3800 and heavier duty models.

Chevrolet's power-packed VALVE-IN-HEAD ENGINES provide improved durability and efficiency as well as their world-famous economy.

Chevrolet trucks have the famous CAB THAT "BREATHES"*! Outside air is drawn in and used air forced out! Heated in cold weather.

Chevrolet Advance-Design brings you the FLEXI-MOUNTED CAB, cushioned on rubber against road shocks, torsion and vibration.

Chevrolet's SPLINED REAR AXLE HUB CONNECTION adds greater strength and durability to heavy-duty models.

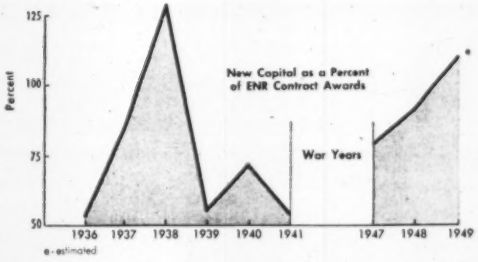
Uniweld, all-steel Cab Construction • Large, Durable, Fully-Adjustable Seat • All-Round Visibility with Rear-Corner Windows* • Heavier Springs • Super-Strength Frames • Full-Floating Hypoid Rear Axle in the 3600 Series and Heavier Duty Models • Double-Articulated Brake Shoe Linkage • Hydrovac Power Brakes in Series 5000 and 6000 Models • Many Color Options.

**Heating and ventilating system and rear-corner windows with de luxe equipment optional at extra cost.*

CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!

CONSTRUCTION TRENDS

NEW CAPITAL FOR STATE AND MUNICIPAL CONSTRUCTION GAINS FASTER THAN CONTRACT AWARDS



BRIGHT PROSPECTS FOR STATE AND MUNICIPAL CONSTRUCTION—1

State and municipal construction—on which contract awards reported to ENGINEERING NEWS-RECORD will run to about $3.15 billion this year—may well be close to the $4 billion level next year. Up a sharp 23% this year from last year, it is likely to gain almost as much in 1950.

This is only one of the results of a penetrating study by ENGINEERING NEWS-RECORD of the financing of state and municipal construction. Centered on the ability of local governments to finance their sharply growing volume of construction, results of the study will give the construction industry a picture of what can be expected in this important field. Results will appear in a series of Construction Trends to be published by ENGINEERING NEWS-RECORD in the weeks ahead.

In general, the great postwar demand for new roads, schools, waterworks, sewerage, and other local projects is unabated. More important as a guidepost to future prospects is this: All signs point to an ample supply of funds for financing state and local construction, regardless of its volume.

The bright prospect for state and local work in 1950 shapes up this way:

The trend of state and municipal contract awards follows the trend of new financing quite closely. Bond issues—as reported in ENR's new capital figures—tip-off the way contracts will move.

Historically, on the average, bond issues and federal aid together have equalled about 80% of the volume of state and local contract awards. The rest—20%—came from revenues, chiefly property, gasoline, and income taxes.

This was true even in the 1930's. Then the need for local relief projects cut into the money towns, cities and states would normally have used to finance construction. That made federal aid necessary and it bulked large in the total financing picture. The total of federal aid, and bond issues, however, continued to average about 80% of contract awards despite the stringency in local funds.

At the end of World War II, however, the ratio between financing and contracts was low. The reason is that the states and municipalities came out of the war well-heeled. They had been limited on what they could spend on construction during the war and had piled up cash. They used their reserves, rather than bonds, to finance postwar work.

Federal aid, too, was at a low point in the postwar years. It was limited pretty much to the highway program. As a result, the states and municipalities relied on bonds and federal aid to finance only a comparatively small part of their construction work during 1946 and '47.

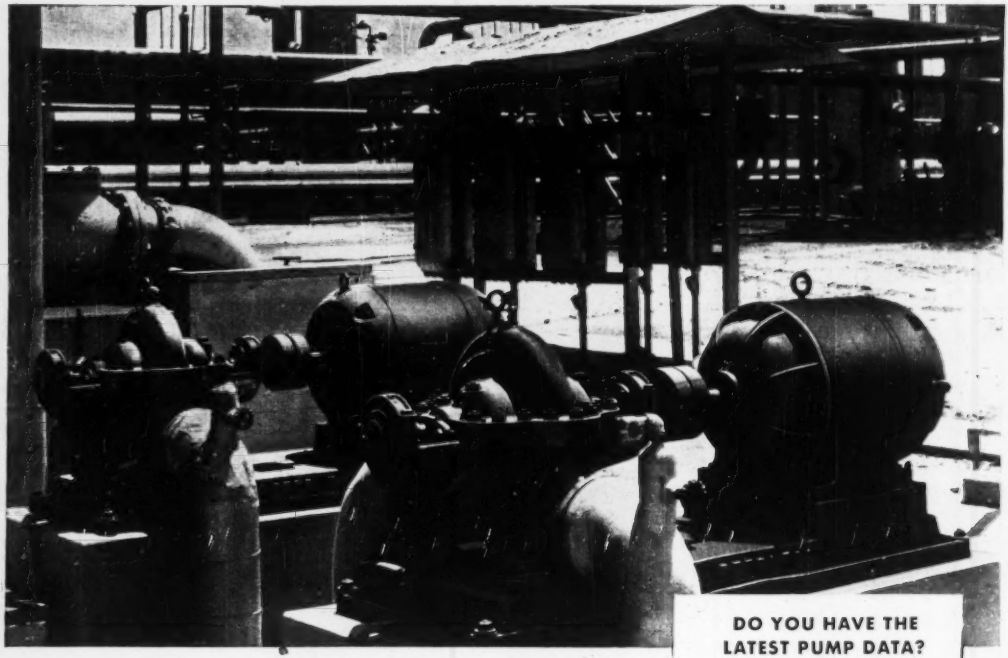
In 1948, however, state and local governments began to sell new bond issues in growing volume. The result was that new capital from bonds and federal aid topped the historical average—80% of contract awards—by a wide margin. They reached, in fact, 92% of the value of contracts. This year, financing ran on at an even higher level. As it looks now, state and local bond issues and federal aid in 1949 will total about $3.5 billion—110%, or so, of the value of state and municipal contracts. This, of course, points to a rising volume of work.

It strengthens the prospect for a high volume of contracts awards in two ways:

1. Contract awards can be expected to rise—and may well reach the $4 billion level in 1950—because they have not yet caught up with the rise in financing.
2. However, 1950 promises to be another big financing year. The amount of new capital raised may well match the gain in contracts. That suggests that state and municipal work will stay at a high level for some time to come.

This bright prospect for state and local financing strongly supports the prospects for total public works, and, of course, for a major part of the heavy construction industry. Even if the federal public works program rises only slightly next year, total public works may well rise close to $1 billion on the strength of the boom in state and municipal work.

WHERE THERE'S A PUMP IN YOUR PLANS



Plan with Peerless Centrifugal Pumps

From plan to plant there's a Peerless horizontal centrifugal pump that meets your needs. For the diversified, continuous duty services of private industries and public projects, Peerless Pumps incorporate many proved advantages in design and construction for extended pump life and operative economy.

All along your flow lines, Peerless can provide pumps incorporating the latest principles of hydraulic practice and experience plus the versatility and efficiency you require for *peerless* pumping performance.

For example, the pumps shown above are single stage, double suction, general purpose Type A pumps, a comprehensive line of Peerless pumps offering a capacity range from 50 to 60,000 gpm. There are scores of other Peerless types, hundreds of other Peerless models for thousands of pumping applications. Peerless furnishes horizontals for handling solids in suspension as well as for clear liquids. There are pumps for boosting, circulating, transferring and filtering. They can handle volatile L-P Gases or tricky acid, basic and salt solutions. They can move liquids at high temperatures or they can provide water (or foam) for *Underwriters' approved* fire protection. Duty can be intermittent or continuous; both single and multi-stage units, with the type of drive you desire, are available, meeting widest head and capacity conditions. Pump and driver are engineered as a unit, tested in a modern hydraulic laboratory that duplicates actual field conditions, to match or exceed purchasers' expectations.

Plan with Peerless for all your needs for pumps. Peerless field and sales engineers are located in all principal cities to help you whenever and wherever there's a pump in your plans. For pump engineering information or service, call on them, or if you prefer, write for the latest pump engineering data. The chart at the right lists a number of the types of Peerless horizontal pump bulletins in which you will be interested.

DO YOU HAVE THE LATEST PUMP DATA?

Informative Engineering Bulletins Available From Peerless Pumps

Here are a few of the services Peerless Pumps perform. Request data by Bulletin number.

Pump Service	Bulletin No.
Water Supply	B-1300
Fire Protection	B-1500
Chemicals and Oils	B-810
Vaporous Liquids	B-2201
Butane-Propane	B-2200
Boiler Feed	B-806
Sewage and Solids	B-154
Hi-Pressure	B-310
Acids and Caustics	D-2400
Process Services	B-803
All-purpose Pumps	B-2301

Peerless
VERTICAL AND HORIZONTAL
Pumps

fmc PEERLESS PUMPS

PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
Los Angeles, California — Indianapolis, Indiana
District Offices: New York 5, 37 Wall St.; Chicago 40, 4554 N. Broadway; St. Louis 8, 3908 Olive St.; Atlanta Office: Rutland Bldg., Decatur, Ga.; Omaha, Nebr., 4330 Leavenworth St.; Dallas 1, Tex., 3905 Elm St.; Fresno, Calif.; Los Angeles 31, Calif.

Too Little and—Oh, So Late!

A CITY of eight million people is now being shocked into the realization that its water supply is not dependable. Newspapers are scaring and pleading with a thirsty and wasteful public to: stop faucet leaks; quit washing cars; order no water with meals; cut out tub baths; turn off faucets while shaving; flush one less toilet per person per day.

The whole thing could reach a silly stage—and has already. A vegetarian has blamed meat eaters for being the greater water drinkers; men accuse women of being the more-frequent-flushing sex. The nonsense extends also to cures. One fellow has invited the city to tap an abundant subterranean river that supposedly flows right under his farm not 100 miles from the city.

But it's tragic—not funny. City officials had ample warning of the whole situation. Water supply engineers gave that warning—over and over—not just recently, but through the years! Hearings, cooperation and funds came hard; the politicos—actually the public—were hard to convince. That same public now faces one of the most convincing water famines ever to hit so sizable a city. Only rain can save New York; for, other than the little savings that a scare campaign can effect, it's too late.

Note to other cities: Have you checked your water supply recently?

Barriers to Interstate Practice

USE OF REGISTRATION LAWS as a means for keeping qualified out-of-state engineers from competing with local practitioners was strongly condemned at the annual meeting of the National Council of State Boards of Engineering Examiners.

The conditions result largely from selfishness and provincialism, as the committee reporting on the matter points out; but most of them find their origin in the widely different requirements that the states have set for registration as a professional engineer, particularly in a few states' requirements that now are considerably above those set forth in the model registration law.

The means by which some of the state license boards restrict the activities of out-of-state engineers range from petty annoyances, such as requiring them to appear personally before the board, to demanding payment of a non-resident permit fee of $250, as is done in Alaska. A common practice is that of refusing to register an applicant by endorsement unless the board of the state from which the applicant comes has signed a reciprocal agreement with the state where he is applying.

All the restrictions listed by the committee have little or nothing to do with an applicant's qualifications to practice engineering. Many have been set up by the license boards through strained interpretations of their state laws. These can be eliminated by the boards themselves. Others will require amendment of registration acts, which means that the engineers in those states must back the proposed changes wholeheartedly.

It is important to observe, however, that success or failure of the movement to eliminate these restrictions will depend largely on what is done by the boards in states with high license requirements, particularly New York.

No state that has raised its educational and training requirements above the level of other states can, with logic, ask all applicants for reciprocal registration to meet those higher requirements while it still has many practicing engineers who were registered under lower requirements or under a "grandfather clause." To do so can be just as serious discrimination against engineers from other states as some of the more obvious discrimination cited by the committee in its report.

There is much to be said in favor of higher standards for registration, but unless the steps in that direction are taken slowly enough friction between states with low and high standards is bound to develop. Leadership in minimizing friction must come from the large states where the need for higher standards is greatest.

How To Get Pollution Abatement

A SYSTEM OF INCENTIVES is needed to stimulate industrial pollution-abatement projects. And it looks as if the dollars-and-cents key to this important objective will be found in the Byrnes Bill, introduced in this session of Congress. This bill would permit amortization of industrial-waste treatment plants in five years (ENR, Dec. 8, p 27), and thus cut the cost of these often unproductive facilities by the taxes saved.

Before the bill can pass, however, Senators and Representatives must be convinced that amortization of construction costs is an essential incentive for cleaning up our dirty rivers. Here is an opportunity for sanitary engineers, public officials and professional-engineering organizations to aid Congress to a fuller understanding of the issues involved. This can be done in part by writing letters of support for the Byrnes bill to Congressmen, by adopting and forwarding resolutions from interested groups and by calling on newspaper editors to solicit their interest. If engineers throughout the country will marshal their forces they can do much in educating the public and their national representatives as to the need for this bill.

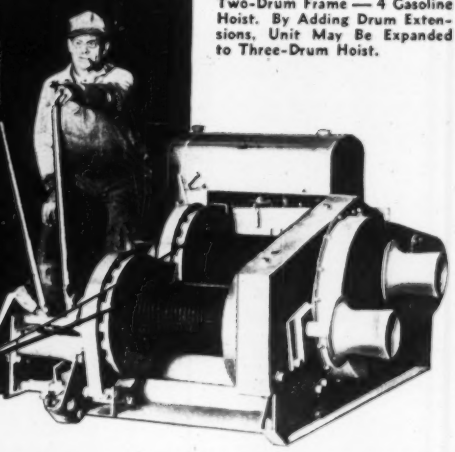
CLYDE

"QUALITY-PLUS"

HOISTS

Lower your Costs

Hoist your Profits!



Two-Drum Frame — 4 Gasoline Hoist. By Adding Drum Extensions, Unit May Be Expanded to Three-Drum Hoist.

ENGINEERED FOR LONG-LIFE DEPENDABILITY

The smoother, easier operation of Clyde Hoists assures **faster, more careful** material handling on construction jobs.

Clyde "quality-plus" Frame-4 Hoists are engineered for maximum efficiency and long-life performance that is unexcelled! All shafts are of high carbon steel and turn on ball bearings. All steel, electric welded frame is of exceptional strength and rigidity but free of unnecessary bulk and weight. And here is another "plus" value that owners and operators appreciate: — at those infrequent intervals when a Clyde Hoist requires maintenance, the easy accessibility and simplified servicing saves time and encourages the operator to keep the hoist in top operating condition.

Whether your requirements call for a one, two or three drum hoist powered by gasoline, electric or diesel unit, it will pay **you** to investigate the complete line of Clyde "quality-plus" Frame-4 Hoists.

OUTSTANDING FEATURES

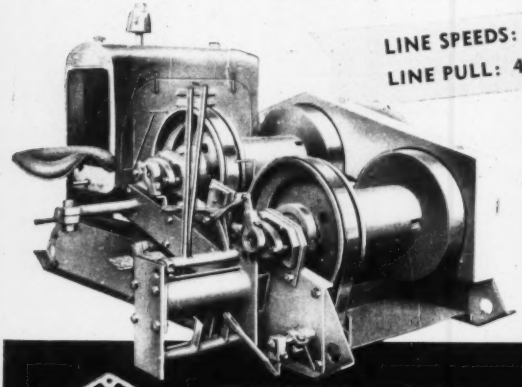
THRUSTS AND FRICTIONS:
Thrusts are full ball bearing screw and yoke type, easily engaged and released. Efficient, simplified cone frictions require minimum care and adjustments.

RATCHETS:
Rugged, positive action rachets are cast on drums. Pawls are visible to the operator for greater safety.

DRIVE:
Chain drive operates in oil bath. Chain adjustments are easily made by means of a new type tightening mechanism. All shafts turn on ball bearings..

DRUMS:
Barrel diameters are of most practical size for the utmost rope economy. Drums are one piece with self-oiling bushings.

POWER:
Choice of gasoline, electric or Diesel.



LINE SPEEDS: 178 to 332 feet per minute

LINE PULL: 4,000 to 5,500 pounds

CONVENIENTLY LOCATED CONTROL LEVERS MINIMIZE FATIGUE AND ACCIDENT HAZARDS

Write Today for Complete Information

HOISTS • DERRICKS • WHIRLEYS • ROLLERS
BUILDERS TOWERS • CAR PULLERS
HANDI-CRANES

CLYDE

CLYDE IRON WORKS, Inc.

DULUTH 1, MINNESOTA

A Subsidiary of Barium Steel Corporation — Steelmakers to the Nation

ENGINEERING NEWS-RECORD

DECEMBER 15, 1949 VOL. 143 NO. 24

Engineers need convincing of welding value, poll shows

ENR survey indicates lower costs through welding await removal of barriers—Turns up clues to better design and construction, need for wider distribution of data

Frederick S. Merritt
Associate Editor

Although structural welding has been known and used for more than two decades, the construction industry still can't agree that the method is a good one. That is apparent from a survey completed by ENGINEERING NEWS-RECORD last week.

At a time when expenditures for new industrial plant show signs of dropping (see p. 17, this issue),—when costs again are becoming a deterrent to new construction—the industry's lack of confidence is important.

That structural welding may, in many structures, save time, money and materials is widely accepted. In total, however, welded bridges and buildings are few in number. Few also are engineers, the architects and fabricators who are wholly convinced of welding's safety or advantages.

Greater acceptance, the survey indicates, can be achieved only if:

1. Welding's reliability can be demonstrated more emphatically;
2. Attention is called to good practices that prevent uneconomical design;
3. Fabricators take on more welding work.

More confidence needed

Engineers, fabricators and contractors from all sections of the country agreed that lack of confidence is the primary barrier to more extensive use of structural welding. Other factors:

1. Poor inspection;
2. Lack of skilled welders, and
3. The unwillingness of fabricators to bid.

Fabricators generally ignored the last point, and blamed uneconomical design, shortage of design data and of designers.

On the matter of inspection, engineers told ENR that costs, lack of adequate methods and qualified personnel were deterrents.

"After all," said **one engineer**, "a poor riveted or bolted job may still be safe. But a poor welded job may not be. You can't take a chance on poor inspection of welding."

A fabricator's reply: Many engineers do not feel it necessary to require inspection of riveted or bolted jobs by outside inspection services. But they show their lack of confidence by requiring such inspection on welded work—thus running up costs. He added that the New York City building code requires such outside inspection.

Research believed necessary

More information on welding, actually, is the key to the whole question of confidence, the survey shows. Mostly, the replies indicated a belief that adequate data do not exist. This is in contrast to the claim by welding experts that the information is available but is not searched out by those who say they want it.

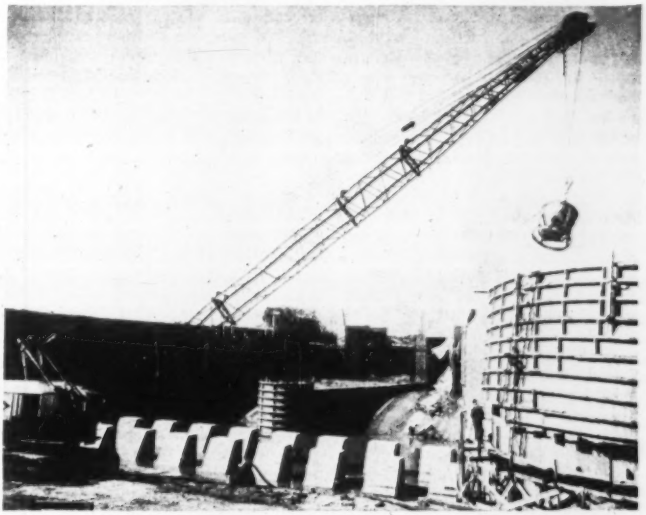
A second engineer suggested that more reports and tests on actually built structures should be undertaken. Another expressed the need for more test data on larger sections subject to fatigue loading.

A fourth engineer wrote: "Many engineers lack confidence in welding and need to be educated."

A fabricator, to illustrate the economics involved in increasing confidence in welding, claimed: "When welding can do the economic job that riveting and bolting cannot do, as has been shown clearly in the field of pressure vessels, nothing is going to stop the progress of welding. It should be remembered, however, that it is requiring hundreds of thousands of dollars for research in that field to eliminate the inherent dangers and to ascertain the best avenues to economy."

Designs could be improved

Faulty design is responsible for the loss of economy in welding, according to the **fabricators.** Some of the



TEXAS FLOOD CURB—These are the outlet works for the San Angelo Dam, under construction near San Angelo, Tex., by the Corps of Engineers. The dam, which will stretch for more than seven mi. across the North Concho River valley, will store flood waters which will be discharged through this outlet. Structure is to be finished by 1953. Lt. Col. Ellsworth I. Davis, Galveston District Engineer, is directing construction.

comments of engineers and architects indicate that there is a lot of truth in this.

An engineer said he usually designed structures as riveted, with contractor's option to use shop welding if desired.

An architect, referring to a design with riveting and welding alternatives, wrote: "Our practice is to let the contractor be the judge."

A fabricator commented: "It is our experience that engineers who are trying to use welding show typical details that in many cases have a very excessive amount of welding. We also find that engineers are apt to combine both welding and riveting on the same piece. When this is done, the piece has to go through additional departments."

More shapes needed?

When asked what structual shapes not now fabricated should be rolled to improve the economy of structural welding, engineers suggested larger and heavier T's.

One engineer replied that a skilled designer could obtain any shape he desired by proper use of the cutting torch and his own ingenuity and knowledge of limitations. Another wrote that he would like to see a thorough research program covering design, fabrication and erection. But in the meantime, he found it possible to use currently rolled structural shapes economically with designs based on both shape and field welding.

A fabricator, in answer to this question, replied: "Structural welding may or may not be greatly handicapped by the lack of the proper rolled shapes for economical welding. One of the methods by which the cost of rolled steel has been held down in the face of rising labor cost in recent years has been a considerable reduction in the number of sizes offered as standard by the mill. It remains, therefore, to demonstrate what particular section it is that structural welding needs so badly and that, if provided, would be absorbed in large quantity.

New designs impractical

"In a recent competition for welded bridges of the future, contestants were encouraged to propose new rolled sections to facilitate the fabrication of their structures. I can say quite confidently that none of the prize-winning designs will ever be attempted in practice, or would be attempted even if the proposed special sections were available, simply because the detailing and labor cost render them quite absurb in competition with established methods. Although encouragement was given, the contest did not turn up any necessary additional rolled section, as far as I observe."

Code limitations

Both engineers and fabricators find that present building codes and bridge specifications hinder the development of structural welding.

Engineers report that: Bridge specifications of the American Association of State Highway Officials do not permit the use of welding for main connections; structural welding is not generally approved or specified for use by either the AASHO or the American Railway Engineers Association; reluctance of clients and lack of detailed requirements in printed state specifications prevents welding in bridge construction.

A fabricator complains: "There is a point regarding public works that we find somewhat confusing, insofar as the same public agencies on some projects will allow welding and on others they will not. With the short time given on the preparation of bids, it is difficult to obtain approval of an addenda to permit a welding alternative, and of course, if it is not done before bids are received, it is almost impossible to obtain this approval later on."

Need experienced engineers

In the opinion of this fabricator, federal, state and city-sponsored work is beginning to take a larger percentage of construction dollars. The reluctance of officials to study welding, and probably, in many cases, the lack of experienced welding engineers in government departments, retards its use.

Comments volunteered by engineers indicate a belief that the use of welding will not increase until the industry does more to make the economies possible in welding available to owners.

Engineers charge that fabricators are partly responsible for the high cost of welding, as opposed to riveting, in that:

1. Prices are uncertain and depend on how busy fabricators' rivet shops are.

2. Fabricators are reluctant to convert their shops from riveted to welded work or to establish new shops for welding.

3. Big fabricating companies can handle much more riveted work than welded work (important in big jobs).

Space factor

A fabricator explains: "Fabricators are accused by welding enthusiasts of refusing to bid or of bidding high on welded fabrication because they want to sit on their investment in punching and riveting equipment. The fact is, however, that welding requires a lot more space and more men to turn out an equivalent tonnage. Even if a fabricator were to throw out every piece of punching and riveting equipment he owns, he probably could not turn out an equivalent tonnage, or earn an equivalent return in welding, until he had doubled the floor area of his shop.

"In good times," he continued, "acceptance of a welded job in a fabricating shop that is based on the older processes simply means that a certain reduction of tonnage output is accepted for that period. Obviously, that is going to happen when times are not good and is not going to happen when times are good. It does not represent anybody's prejudice against welding, but a desire to stay in the business of making a profit."

Take bids to desilt silted desilter

Bids have been received at Boulder City, Nev., by the Reclamation Bureau for raising the 20-in. suction dredge which sank in the Colorado River more than a month ago.

Constructed of nine specially built steel pontoons, the new million-dollar dredge was put into operation near Needles, Cal., recently to relieve excessive silting in that part of the Colorado River, (ENR March 31, p. 38).

Pacific Bridge Co., San Francisco, entered the low bid of $238,000. It covers only refloating of the craft.

Reconditioning of machinery and equipment aboard it is expected to cost about $300,000 more, according to USBR estimates.

The dredge was found under 19 ft. of water Nov. 5 by crews arriving to start the day's dredging at the site.

Attempts to bring the craft to the surface, by sealing the pontoons and pumping out the water, were made immediately by bureau engineers. This was prevented, though, by rapid silting over the decks of the sunken craft. Divers worked at the job 24 hours daily until they were forced to quit by silt accumulations.

Now, it is expected that a cofferdam will have to be built to salvage the dredge. Specifications allow 120 days for the refloating.

No cause for the sinking has been established definitely. It has been suggested that a check valve on a discharge line may have stuck, or that a siphoning action may have developed in the engine cooling system.

Gen. J. S. Bragdon named deputy engineer chief

Brig. Gen. John S. Bragdon has been named Deputy Chief of Engineers, succeeding Maj. Gen. Roscoe C. Crawford, who retired Nov. 30. The announcement was made last week by Maj. Gen. Lewis A Pick, Chief of Engineers.

General Bragdon has headed the Military Construction Division since 1944. He was appointed to the post of assistant to the Chief of Engineers in May, 1948.

His successor as head of the Military Construction Division is Brig. Gen. George J. Nold, who became assistant to the Chief of Engineers Dec. 1, and had been division engineer for the North Atlantic Division, New York, since August, 1948. It was erroneously stated in our Dec. 8 issue that General Nold was succeeding General Crawford.

Housing starts mark tied with 93,000 last month

The all-time record for housing starts in one year was tied last month, making a new high a certainty. November starts reached 93,000, the Bureau of Labor Statistics announced. This brought the 11-month total to 937,000, the high mark set in 1925. This figure includes an upward revision of 1,000 for August, bringing the total housing starts for the month to 99,000.

Down 7,000 from the 100,000 starts on construction of nonfarm dwellings in September and October, starts in November exceeded those in the same month last year by about 30,000. The 1949 11-month total was 6,000 larger than total 1948 starts.

Seek easier works loans

Buffalo's Sewer Authority wants Congress to liberalize loan provisions of the Water Pollution Control Act. That would help it obtain funds for the abatement of pollution in the Buffalo River.

The agency's petition followed a report by its general manager on recent hearings by the International Joint Commission regarding Niagara River pollution. Manager F. W. Crane said that Buffalo River pollution seemed to be a major factor in the Niagara's pollution problem. The authority wants loans up to $5,000,000 at 1 percent made available for treatment works which contribute to abatement of existing pollution in interstate or boundary waters. It suggests that the Reconstruction Finance Corp. lend the funds.

Interior fights Kings River decision

The Interior Department last week (Dec. 9) moved to reopen the case on power development of the Kings River and tributaries in California. In an unusual maneuver, Secretary Oscar L. Chapman sent two papers in one packet to the Federal Power Commission:

(1) A petition to be allowed to become an intervenor in the case, and

(2) An application for a rehearing by FPC on its recent license to the Pacific Gas and Electric Co. (ENR Nov. 24, p. 17) and permit to the Fresno Irrigation District.

Chances for a rehearing are slight. The FPC must first determine whether Interior is entitled to intervene formally in the case. Legal questions are involved in this decision. If FPC concludes that Interior is legally qualified to be accepted as an intervenor, the commission will then pass upon the application for a rehearing. It might or might not be granted.

As an interested federal agency, Interior participated both in a hearing at Fresno, in May, 1948, and in arguments before FPC in October, 1949—but not as a formal intervenor. Counsel for the Bureau of Reclamation represented the department in both proceedings. The FPC examiner at Fresno ruled in favor of Interior's contention that water resources of the Kings River should be developed by the federal government. This finding was reversed by the commission itself when it issued the license to PG&E and the preliminary permit to the irrigation district for new power developments.

As noted in ENR, Dec 1, p. 17, PG&E is pushing plans to start construction next year on three new hydro plants and enlargement of a fourth in the Kings River basin. The projects, to cost $60,000,000, will develop 275,000 kw. of additional capacity. As the FPC has licensed the work, PG&E has full authority to go ahead with construction.

Interior's application and supporting brief last week objected also to the FPC permit allowing the Fresno Irrigation District to make investigations preliminary to construction of the district's proposed power plant at Pine Flat Dam, on the Kings River. The army engineers within recent months awarded a contract for building a flood-control dam at this point. Interior wants to build the hydroelectric plant at the Pine Flat Dam. It argues that the Kings River is a logical part of the Central Valley project now being developed by the Reclamation Bureau, and that all future developments should be integrated under the federal government.

Plan to promote sales of building products

A competition designed to aid manufacturers of building products in increasing the effectiveness of technical and promotional literature prepared for architects, will be conducted by the Producers' Council and the American Institute of Architects.

The competition is open to all manufacturers of building materials and equipment, and awards in the form of Certificates of Merit will be announced next May at the annual convention of the institute, where the winning entries will be placed on exhibition.

Product literature may be entered in the competition by manufacturers or by individual members or chapters of the institute. All entries and nominations must be made by March 15, 1950.

Manufacturers of building products will submit their literature to the Producers' Council, 815 Fifteenth St., N. W. Washington, D. C., and architects or chapters of the institute will send their nominations to the American Institute of Architects, 1741 New York Avenue, Washington, D. C.

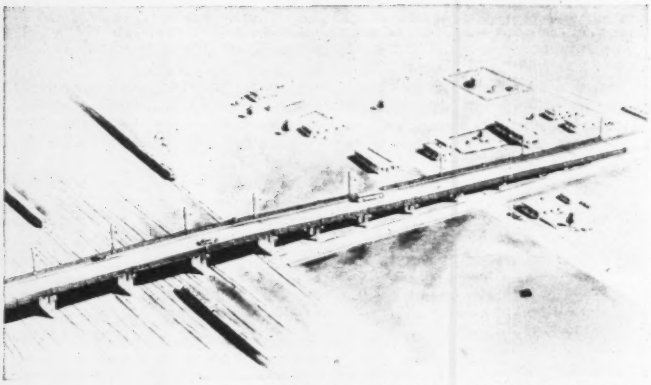
New $10 million dredge to work in N. Y. harbor

The recently launched "Essayons" —world's largest seagoing hopper dredge—is now being readied for work in New York harbor. It will take a 133-man crew to operate the ship on a seven-day-a-week schedule.

Built for the Corps of Engineers at a $10,000,000 cost, the 525-ft. craft can hoist its two 36-in. suction lines completely clear of the water and travel 15½ mph. fully loaded.

Hopper capacity is 8,000 cu. yd., and the ship draws 27 ft. 8 in. of water loaded. Two pumps of centrifugal side-suction dredge type each have theoretical 63,450 gpm. capacity at 180 rpm. The port and starboard 36-in. suction lines have trunnion connections giving them maneuverability, and the suction heads can be lowered to a depth of about 62 ft. at a 45-deg. angle.

Design of the "Essayons" was by the Marine Division of the Philadelphia Office of the Army Engineers under Col. F. F. Frech, district engineer. Sun Shipbuilding and Dry Dock Co. built the dredge in its Chester, Pa., yards.



NEW ORLEANS SPANS RAIL YARD—Helping traffic flow across 16 tracks of the Louisville and Nashville and New Orleans and North East railroads will be this 1,630-ft. overpass, at North Galvez Street between Port and Clouet streets. Base bid for this structure calls for continuous steel riveted stringers, but the alternate calls for an all-welded design. It will have a 28-ft. roadway, with a 5-ft. sidewalk and an 18-in. safety curb. Alvin M. Fromherz is consulting engineer. Under the impact of higher costs and large work accumulations, such projects as these are held back by the fact that . . .

Cities need more revenues for works; see U. S., state treasuries as source

American Municipal Association convention hears pleas for more equitable revenue divisions—Want larger federal pollution aid

Municipalities are going to need greatly enlarged budgets merely to keep abreast of minimum works requirements. Urban expressways, city street construction and maintenance, slum-clearance and low-cost housing, water and sewage works and numerous other services demand it. This theme was emphasized repeatedly at the 26th annual meeting of the American Municipal Association at Cleveland.

Just how the cities expect to raise these added funds was not clear. Some talked of higher sales taxes, special amusement taxes, local levies on incomes or stiffer rental charges on public services.

Virtually all agreed that cities and municipalities should receive a more equitable share of federal and state funds for public works. This was brought out in two resolutions which were adopted, urging:

"That the federal government increase its appropriations from existing excise taxes for the construction of highways, urban expressways and city streets . . . and that a greater share of all highway-user taxes be made available for the improvement of municipal streets and highways."

Failure to receive this added help, city officials contend, means continued strangulation of business and industry within municipalities.

The association also urged unanimously that Congress liberalize the 1948 Federal Pollution Act by:

1. Increasing the total loan authorization for construction of sewage treatment and disposal facilities, and

2. By raising the maximum amounts of federal funds for each project.

Although this act has encouraged states to enact mandatory pollution abatement legislation, it provides only token financial assistance. This assistance was reported to be less than four percent of the estimated cost of sewage disposal plants needed by the nation's municipalities. Such limited aid is viewed by the cities as wholly inadequate to proper stimulation of sewage treatment plant construction.

A multiple-point program was urged by Mayor deLesseps S. Morrison, of New Orleans, 1949 association president. He urged delegates to:

1. Take immediate advantage of aid from the new Federal Housing Act.

2. Expedite a national campaign to get more street improvements for city motorists out of gasoline and motor vehicle taxes, and

3. Launch a national fight to assure home rule for cities.

Mayor Quigg Newton, Denver, was elected president of the association, succeeding Morrison. Mayor William Devin, of Seattle, vice-president.

Views similar to Mayor Morrison's were expressed by Glenn Richards, Detroit public works superintendent. He warned that cities must "fight fire with fire" to get their fair share of state motor vehicle revenues for municipal street and highway improvement. "For years, rural interests have been alert on this subject," he said, "resulting in an increased tendency on the part of state legislators and highway commissioners to use a major part of highway revenues for the construction of highways outside of cities."

G. Donald Kennedy, formerly with the Automotive Safety Foundation and recently appointed assistant to the president of the Portland Cement Association, reported that the 43,000,000 million vehicles in operation today are rolling up 400 billion vehicle-miles of travel per year. Over one-half of this is on city streets.

First step in solving the traffic problem in large cities today, Kennedy declared, is a comprehensive engineering and financial study on a state-wide basis to give the relative traffic requirements between city, county and state. "The city of tomorrow," he said, "will be built within the framework of adequate traffic facilities."

Group formed to study truck damage to highways

A new organization to study highway problems arising from heavy truck traffic was organized last week at Columbus, O. There, highway officials from 14 states formed the Inter-Regional Council on Highways Transportation.

A principal council function will be to devise methods for uniform laws and regulations governing motor transport. It also set about obtaining test roads to study truck damage.

Albert S. Gordon, administrative assistant to the Maryland Highway Commissioner, is chairman of a five-member committee organized to study highway damage. He and his committee will make recommendations before next Feb. 1. Other members are F. L. Schmidt, Pennsylvania's chief highway engineer; M. F. Johnson, of the Kentucky Highway Department's maintenance division; V. L. Glover, of the Illinois Highway Division; and T. J. Kauer, Ohio's Highway Director.

Gordon suggested the test program, estimating it would cost $50,000 per state.

Represented at the meeting were Indiana, Wisconsin, Kansas, Michigan, New York, New Jersey, Delaware, West Virginia, Connecticut, Maryland, Pennsylvania, Kentucky, Illinois and Ohio.

Turnpike funds tied up in New Jersey and Ohio

Funds for preliminary work on toll turnpikes in New Jersey and Ohio have been tied up as part of the process of determining the constitutionality of the turnpike acts passed in those states this year.

In Ohio, this action was taken deliberately by the State Finance Director. He refused to honor a loan of $600,000 to the Ohio Turnpike Authority for preliminary engineering work which had been approved by the Ohio Board of Control. Chief Justice Weygandt now has ordered the State Finance Director to show cause why he should not approve the loan. This makes it possible for the Ohio Supreme Court to pass on the constitutionality of the turnpike act.

In New Jersey, however, the Supreme Court's action came as a surprise in a friendly action brought to test the turnpike act as a preliminary to selling its bonds. The court approved all the provisions of the act except the clause that authorized the State Highway Department to loan any available funds to the New Jersey Turnpike Authority for office expenses and the preliminary engineering studies that had to be made before its bonds could be sold. These studies were completed recently and the authority has a number of engineering firms lined up to start work on plans and specifications as soon as its first bonds are sold (ENR Oct. 27, p.36).

The court's action is not expected to cause any delay in getting the project started. In October, the turnpike authority borrowed enough money from the highway department to finance its activities until its bonds are sold.

Kansas names engineer to Senate term

Harry Darby, of Kansas City, Kan., a mechanical engineering graduate of the University of Illinois and former chairman of the Kansas Highway Commission, has been named to a one-year U S. Senate term to replace Kansas' late Senator Clyde M. Reed. Darby is a Republican.

Senator Darby, 54, a member of ASCE, is chairman of the board and owner of The Darby Corporation, manufacturer of steel, aluminum and corrosion-resistant products.

During the first World War he served with the 314th and 104th Engineers. From 1933 to 1937 he was chairman of the State Highway Commission of Kansas.

Indiana cities see financial crisis as court blocks special bond issues

State Supreme Court calls special district "subterfuge" for getting around legal debt limit—Sewage district work in doubt

Indiana cities, already facing a financial crisis because of a state Supreme Court decision on validity of sewage bond issues, awaited the outcome of a second court test last week.

An earlier decision has already blocked the city of Indianapolis from proceeding with its $19,500,000 sewage improvement program by casting doubt on the bonding powers of all special taxing districts. The newest case—a taxpayers' suit challenging the right of a Hammond sanitary district to issue bonds for sewer construction—may clarify the earlier decision and will certainly affect millions of dollars of work projected in the state.

Sewage programs active

Indiana's legal troubles were salient in a week of announcements of numerous sewage improvement programs throughout the United States, as communities and states continued their long fight against stream pollution and inadequate local works.

In the Indianapolis case, the city's sewage program was not directly involved. A taxpayer challenged the right of the city's Department of Public Health and Hospitals to issue $2,600,000 in bonds for additions to the general hospital. However, the high court declared that an Indianapolis Health and Hospital District—formed to finance the hospital work—was "a subterfuge to get around" the city's debt limit.

Bonding power in doubt

The decision immediately cast doubt on the bonding powers of all special districts, without setting forth any general guide for municipal officials. Lawyers pointed out that should the court—in the Hammond case—again declare the special districts without power to issue bonds, it would create financial crises for many cities that have already exhausted their borrowing power and must now depend on special-district borrowing.

Faced with this situation, the city of Elkhart appointed a city council committee to sound out taxpayers on a $2,048,000 bond issue by the city to pay for construction of a new sewer system; and Indianapolis' Chamber of Commerce began a survey of how much the city's tax rate would have to rise to finance the new sewer work.

Outside Indiana, many cities went ahead with bond issues to finance work. These included a $20,000,000 issue at Cleveland. At San Jose, Calif., city officials planned to place a $6,800,000 issue before voters next spring, despite the fact that the proposal was turned down (by a narrow margin) at recent elections.

Stream pollution work

On the stream pollution front, Detroit ran into opposition from its city plan commission on a pollution-diversion scheme for the Detroit River. City engineers proposed construction of a breakwater extending 1½ mi. along the river from the mouth of Fox Creek to carry storm and sewage flow away from the city's river water-intake.

The planning commission objected that the breakwater would block construction of a planned waterfront parkway, and would concentrate pollution along the shore.

In Rhode Island, consulting engineers advocated a joint attack on pollution in the Newport harbor by the city and the U. S. Navy.

In a report to the city, the Boston firm of Metcalfe and Eddy suggested that the Navy and the city get together to build a $2,318,000 system of connecting sewers, force mains, a pumping station, treatment plant and outfall that would be ample provision for a Naval station employing 14,000 persons, and a city population numbering 40,000.

And Richmond, Va., was notified by the state Water Control Board that its anti-pollution program must be speeded, and that chlorination or some other method should be used to treat sewage discharged into the James River. The city, meanwhile, went ahead with plans for a $12,800,000 program of general improvement projects.

Tampa readies work

Other sewage works developments reported during the week included these:

Tampa, Fla., prepared to begin work on its $13,000,000 master system—a program that will include a new disposal plant as well as new lines; Sarasota, Fla., planned a $3,700,000 program; Binghamton, N. Y., began work on $500,000 worth of contracts for segments of an interceptor system.

WHITNEY DAM PROGRESSES—Aimed at halting annual flood damage along the Brazos River, Texas, which has been estimated as high as $7,500,000 annually, is Whitney Dam, being built for the Corps of Engineers about 15 mi. north of Waco. This view looks east, shows the concrete plant and aggregate piles, conveyor system and rail yards at upper right. In the center is steel construction trestle, part of which will remain embedded in the dam as concrete rises. The dam will be 19,600 ft. long, the concrete section shown here 1,674 ft. long and 167 ft. high. It will have two 20,000 hp. turbines for power generation. L. P. Reed, Inc., and Martin & Grace, of Clifton, Tex., are contractors. (Edney Photo, Itasca, Tex.)

Second largest works fund for N. Y. C.

Reconstruction of the Brooklyn Bridge will go ahead next year. That became definite last week when New York City's Board of Estimate adopted its second largest capital budget in history and made available sufficient funds for the renovation.

Public Works Commissioner Frederick Zurmuhlen told ENGINEERING NEWS-RECORD that funds available would include enough not only for the reconstruction of the bridge itself but enough for final plans of the approaches and the work on them as well. The department, he said, would award contracts soon after Jan. 1, when the new budget becomes effective—assuming it is accepted by City Council later this month.

Expect no traffic tie-up

Work on the bridge has been held up despite the opening of bids recently because the 1949 budget limitation was insufficient to cover low bids except in one alternate specification (ENR Nov. 17, p. 28). Zurmuhlen said his department would work with the Police Department and Board of Transportation to minimize traffic tie-ups while reconstruction is in progress. Expectation is, he said, that at no time will the bridge be completely closed. Plans call for reconstruction of the south lane first, then the north. Zurmuhlen added that the department expects to let another contract for final design of the approaches to D. B. Steinman, consulting engineer, and let contracts for the approaches when plans are ready. The entire job is expected to take about one year.

Election added funds

The 1950 capital budget totals $335,647,496. That figure exceeds by more than $95,000,000 the figure prepared Nov. 1. The reason: Approval at the last election of a $150,000,000 expansion of the city's borrowing power (for hospitals) beyond the constitutional debt limit. This amendment also exempted $70,000,000 in dock and transit borrowing from the debt limit. Available from new city funds is $76,030,346 for hospital construction. Not all of the $150,000,000 of new borrowing power is included in the 1950 budget because of practical limits upon the amount of hospital work which can be got under way the first year.

The 1950 budget is $1,262,276 smaller than this year's record total.

Plywoood standard ok'd, submit plastic tile code

A new standard for hardwood plywood is available and another for polystyrene plastic wall tiles and adhesives has been submitted for approval.

Available from the Southern Plywood Manufacturers' Association, 728 W. Peachtree St., N. W., Atlanta, Georgia, is Commercial Standard CS35-49, covering hardwood plywood. Effective from last Dec. 1, the new standard supersedes one designated CS35-47, and marks major changes in glue types, maximum veneer thicknesses and test requirements. Only minor grade changes are made.

Four new types defined in the standard are:

Technical—hardwood plywood containing a fully waterproof bond to withstand full weather exposure and built to satisfy requirements where plywood may be subjected to highly stressed conditions.

Type I—that containing a fully waterproof bond to withstand full weather exposure.

Type II—that containing a water-resistant bond and which will retain practically all its strength when subjected occasionally to thorough wetting and drying.

Type III—that containing a glue bond suitable for use where it will not be subjected to water, dampness or high humidities.

Compiled by the National Bureau of Standards and submitted to the trade for consideration and acceptance is a recommended Commercial Standard for Polystyrene Plastic Wall Tiles and Adhesives for Their Application. It establishes a minimum standard of quality through approved tests, materials, tolerances and similar points. These aim at insuring a satisfactory product for wall or ceiling installations in residential, commercial, industrial or other types of buildings. A few copies are available from the Bureau's Commodity Standards Division.

Organize interstate group

Studies of the potentialities in water resources, pollution control and industrial development of the Lake Champlain Basin will be undertaken soon by the Interstate Commission on the Lake Champlain Basin.

This agency, recently created by New York and Vermont to foster development of the area, was organized early this month. New York Senator Floyd E. Anderson, of Binghamton, was named chairman. Harris W. Soule, of Montpelier, managing director of Vermont's Development Commission, is vice-chairman.

Cities, industries don't cooperate in sewer handling of trade wastes

Fifth Industrial Waste Conference hears how both can make more effective use of facilities to abate pollution

John C. Bumstead
Associate Editor

Cities and industries are not cooperating reasonably to dispose of trade wastes in public sewer systems.

"The record is not a good one," W. H. Wisely told the Fifth Industrial Waste Conference at Purdue University, Lafayette, Ind., Nov. 29 and 30. Wisely is executive secretary of the Federation of Sewage Works Associations, with headquarters at Champaign, Ill.

Breakdown of effective collaboration to abate pollution by industrial wastes is attributable to several causes, Wisely said. He pointed out that:

Cites causes

1. Municipalities have been unreasonable about accepting trade wastes that could be handled by existing plants. This attitude is manifested by building plants without capacity to treat industrial discharges.

2. Preliminary analyses of the probable effect of industrial wastes on sewerage systems often are not made.

3. Preliminary analyses that are made often are unrealistic. This is generally due to inaccurate or incomplete information on the character of industrial operations and wastes.

4. Agreements are not made that delineate clearly the character of wastes that are objectionable to municipal facilities.

5. Treatment plant personnel often are unwilling to make reasonable adjustments in processing that would accommodate certain wastes.

6. Industrial management is responsible for a failure to exercise the necessary control over wastes; to insure conscientious operation of pre-treatment facilities; and to give prompt notice to cities of accidental losses that may upset or damage municipal sewage facilities.

7. Industry is often unwilling to bear continuing or recurring costs properly chargeable to handling its waste or to reimburse cities for damages caused by discharges.

8. Industries and cities each lack consideration for the practical problems of the other, a situation often compounded with mutual suspicion and distrust.

Cities and industries can work hand in hand to solve industrial waste-treatment problems and to abate stream pollution even though past performance hasn't been good, Wisely declared. He cited a few examples of successful cooperation to support this position.

A pollution-capacity study of a section of the Wabash River—unlike previous stream surveys—is in progress under the general supervision of the Ohio River Valley Water Sanitation Commission. Robert E. Horton, coordinating engineer for the commission, reported that the work is featured by:

1. Intensive sampling over a short period to provide proper data for later statistical analysis. The sampling period was 25 days.

2. The opportunity to coordinate special skills of nine different agencies to expedite the study.

3. Application of probability theories so that a series of variables could be projected to a knowledge of conditions in the river under varying conditions of flow, pollution loading and water quality.

The conference, directed by Don E. Bloodgood, professor of sanitary engineering, is sponsored by Purdue's school of civil engineering and technical extension division and the Indiana State Board of Health. It was attended by 375 sanitary and industrial experts, as well as by 104 student engineers.

N. Y. port group bypasses city on pier development

Haggled over for 27 months, the proposed $17,000,000 rehabilitation of the Hoboken (N. J.) waterfront has taken another step forward. The Port of New York Authority will submit its plan directly to the U. S. Maritime Commission.

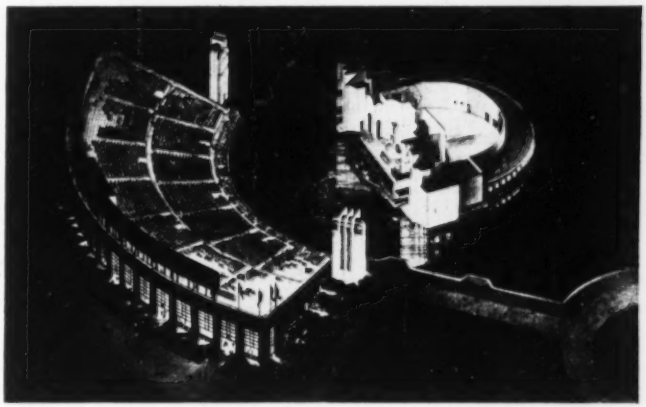
This action constituted a rebuff of Mayor Fred M. DeSapio by the authority. Negotiations between the city and the authority had continued fruitlessly since September, 1947, deadlocked principally on the question of what revenues Hoboken would get.

A third attempt at agreement, urged by New Jersey's Gov. Driscoll, ended—as far as the authority is concerned—Nov. 30 when Mayor DeSapio asked for more time to study the authority's latest proposal. In deciding to submit its proposal to the Maritime Commission without Hoboken endorsement, the authority emphasized that its plan guaranteed the city 75 percent of net revenues.

W. Va. pushes planning for cross-state toll road

Plans for a toll turnpike from the northern panhandle of West Virginia to a point near Bluefield are advancing rapidly, according to Frank S. Easley, a member of the West Virginia Turnpike Commission.

The toll turnpike will cost about one million dollars per mile, but the toll system is expected to pay the original costs, maintenance fees and personnel salaries.



MARINE STADIUM is planned to seat 9,000 for water and stage shows at the Long Island Park Commission's nationally known Jones Beach. The first contract went to Lenart Constructors, Inc., New York, for $738,500. It takes in foundations and substructures of the stadium and stage, including: 1,200 cast-in-place, 12-in. reinforced concrete piles and an underwater stage-to-stadium tunnel. Superstructure contract will be let early next year.

CONSTRUCTION BUSINESS

November backlog removals 1949's top

More heavy construction was taken off the planning shelf and let out to contract in November, than during any other month this year. A total of $348,112,000 worth of awards was removed from the industry's backlog, as measured by ENGINEERING NEWS-RECORD's continuous proposed construction inventory.

The month's weekly average of $87,000,000 in contracts "advanced to active status" was nearly 75 percent higher than that of November 1948, bringing the total of heavy construction removed from the backlog this year to $3,302,916,000. This is 23½ percent above the comparable figure a year ago, by weekly averages. The average week during the first 11 months of this year saw $70,270,000 in contracts taken out of the backlog, compared with an average of only $56,890,000 a year ago.

There was no shrinkage in the backlog during November, however, despite the rise in jobs taken out. A total of $759,466,000 worth of work proposed during the month caused the third largest increase in the construction backlog recorded this year. At the end of the month it was up $411,354,000 to $46,763,376,000, approximately enough work at the 1949 rate to occupy the industry for five and a half years.

Proposed highways, public and commercial buildings were the big items in November's backlog rise. Highway plans added were $138,543,000 in excess of those taken out of the reserve, public buildings worth $187,953,000, and $84,864,000 in commercial projects were added to the backlog. Also waterworks plans of $18,926,000, industrial buildings worth $10,349,000, and private unclassified work, pipelines and distribution lines, etc. of $57,655,000 were added.

For four classes of construction the backlog receded. Biggest reduction is in the earthwork and drainage backlog, $34,465,000 lower at the end of the month. The reserve of proposed public unclassified work was reduced by $31,630,000, sewerage works by $12,853,000, bridges by $7,988,000.

ENR cost indexes rise; lumber, cement prices up

The ENGINEERING NEWS-RECORD Construction and Building Cost Indexes are up fractionally in December under pressure of stiffening lumber and cement prices. Labor rates are unchanged.

New value for the Construction Cost Index is 480.32 for December (1913 base), up 0.3 from last month's figure. This tops the October 1948 peak of 480.21 for the second time this year. October 1949 value was 480.54.

The Building Cost Index is 353.07, up 0.3 also from the November value. Though highest this year, the December index is exactly four points lower than the postwar peak in October 1948.

Lumber prices in the 20 cities covered by the indexes climbed 22 cents a thousand to an average of $78.78 Mbf for Douglas fir and short leaf yellow pine 2x4's. The low for lumber was $78.34 in September of this year, following which there has been an irregular but decided recovery.

Cement rose another cent per barrel on the 20-cities average to $2.96 bbl. A gradual decline from the $2.99 peak for cement in May lowered the average price to $2.94 in October. Since then the rise has been a cent a month.

Structural steel is still priced at $3.25 per cwt. in major production centers, the same rate established when steel went off the basing point system in mid-1948. Recent pension agreements and increases in scrap costs have led to scattered price-hikes on sheet, strip and alloy steel. Higher steel prices next year are expected by many observers, possibly in the form of extras only, possibly in base prices.

Construction labor rates in the 20 major cities covered by regular ENGINEERING NEWS-RECORD wage and price surveys, remained unchanged during the past month. Average common labor rate on building and heavy construction is $1.478 for the fourth consecutive month, longest stable period since the war. The average of three skilled trades' pay is $2.462, same as last month. This includes carpenters, bricklayers and ironworkers. Compared with a year ago common rates are up 4.6 percent, the skilled average is up 4.9 percent.

Cost indexes change little

Three other construction and building cost indicators show minor ups and downs for October and November, which together point up the lack of continuity in the current cost picture.

The national average construction cost index of the American Appraisal Co. continued its nine-month decline with a one point reduction in October to 484 (1913 = 100). Higher lumber prices and freight rates were more than offset by increasing productivity and cheaper ready-mixed cement and brick, according to that company. Net decline in the index since its October 1948 peak is now 20 points or 4 percent.

A slight rise in the E. H. Boeckh national average cost index for brick-concrete type commercial and factory building put the October value at 387.3 (1913 = 100). The peak of 391 in October and November 1948 was reached again last March. Low for this year was 385 in May. Boeckh's New York index for the same type construction remains at 454 for the fourth month, 16 points or 3½ percent below the March high of 470.

The Smith, Hinchman & Grylls building cost index is unchanged at 211 for November (1926 = 100). Since May this index has ranged between 210 and 212, about 6 percent under the 225 peak of late-1948.

Highway price trends mixed

Average bid-prices on Federal-aid highway construction in the third quarter of this year are slightly higher for a third of the classes of construction priced. These include: Portland cement concrete bases, Portland cement concrete surfaces in place and structures, common dry structural excavation, bituminous road mix, and clay and galvanized iron pipe. Most other prices are lower for the quarter. The accompanying table shows bids averaged for the past two quarters, as reported by the Bureau of Public Roads, General Services Administration.

Average Bid Prices for Federal-Aid Highway Construction

Classification	1949 3rd/4	1949 2nd/4	1948 Aver.
Roadway excavation:			
Borrow, cy	$0.54	$0.66	$0.55
Common cy	0.32	0.33	0.36
Unel. cy	0.43	0.43	0.46
Rock, solid cy	1.08	1.33	1.21
Struct. excavation:			
Common, dry cy	3.22	3.03	3.31
Unel. cy	3.44	3.24	3.37
Steel:			
Pave. reinf. lb	0.068	0.078	0.072
Struc. reinf. lb	0.102	0.105	0.107
Struc. steel lb	0.131	0.142	0.140
Bases, in place: sy			
Grav. & Cl. grav.	0.36	0.41	0.39
Port. cem. concr.	3.65	3.55	3.08
Macad. or stone	0.95	0.97	0.92
Surf., in place: sy			
Grav. & cl. grav.	0.14	0.15	0.15
Port. cem. concr.	3.39	3.18	3.32
Bitum. surf.	0.24	0.25	0.30
Bitum. road mix	0.15	0.14	0.61
Bitum. intermed.	0.66	0.72	0.78
Bitum. concrete	1.19	0.98	1.07
Pipe: lf			
C. I., 18-inch	9.15	12.21	9.96
Clay, 6-inch	1.32	0.98	1.17
Concr. reinf., 24"	4.86	5.11	5.19
Galv. iron, 24"	4.71	4.64	4.63
Struct. concr: cy			
Superstructures	47.81	47.13	50.60
Substructures	45.62	45.27	46.70
Found. & foot.	41.17	41.43	47.48

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 58, went to press.)

Bus Terminal—Merritt-Chapman & Scott Corp., New York, N. Y., was low bidder at $8,938,617, for constructing superstructure of bus terminal in New York City for the Port of New York Authority. This bid is exclusive of structural steel and foundation for which contracts have already been awarded. There were ten bids on the present project with a high bid of $10,722,359.

Natural Gas Line—Trunkline Gas Supply Co., Chicago, Ill., plans 740 miles of natural gas pipeline from Louisiana to Illinois to cost about $85'000,000. P. McDonald Biddison is vice-president and chief engineer for company.

Apartment—Baltimore Contractors, Inc., Baltimore, Md., has been awarded contract for 10-story apartment at Baltimore by the Mary Lander Apartments, Baltimore, at an estimated cost of $4,000,000. Hal A. Miller, Baltimore, is architect.

Pipeline—Montreal Pipe Line Co., Montreal, Que., plans 236 miles of 18-in. pipeline to parallel present line from Montreal to Portland, Me. Work will begin in 1950 and will cost about $15,000,000. C. C. Lindsay, Montreal, is engineer.

Roads—Alaska State Roads Commission, Juneau, Alaska, received low bid from Babler Brothers and Rogers, Portland, Ore., for Richardson Highway, Alaska. The bid on Section B-2 was $1,223,057; on Section B-3, $1,465,000.

Railroad Relocation—Morrison-Knudsen, Inc., Boise, Idaho, has been awarded contract for relocating the Spokane, Portland & Seattle Railway—in connection with the McNary Dam—by the U.S. Engineers, Walla Walla, Wash., at $3,275,224.

Drainage—Fort Bend County, Tex., plans county-wide drainage program to cost $2,175,000. Freese, Nichols & Turner, Houston, are engineers.

High School—Board of Education, School District 189, St. Clair County, East St. Louis, Ill., plans high school to cost $2,500,000 to $3,000,000. Albert M. Goedde, East St. Louis, is architect. The district will vote on bond issue April 4, 1950.

Dam and Filtration Plant—Latham Water District, Colonie, N.Y., will soon file application with the New York State Water, Power & Control Commission for permit to construct a dam at Stony Creek, and a filtration plant to supplement present water supply. Estimated cost of the project is $1,000,000.

Hospital—Mary Imogene Bassett Hospital, Cooperstown, N. Y., will open bids Jan. 6 for an addition to cost $2,000,000. York & Sawyer, New York, N. Y., are architects.

Power Plant—Thomas Bryan & Associates, Houston, Tex., has been awarded contract by U. S. Atomic Energy Commission, Los Alamos, N. M., for the construction of a steam-electric plant at Los Alamos Division, at $1,665,236.

Long-Distance Telephone Building—Southwestern Bell Telephone Co., St. Louis, Mo., awarded contract to W. S. Bellows Construction Corp., Houston, for 14-story, long-distance telephone building at Houston, Tex., to cost $3,000,000. C. E. Overbeck is architect for owner. Robert J. Cummins and Reginald F. Taylor of Houston are engineers.

Hospital—Board of Bernalillo County Commissioners and the Bureau of Indian Affairs, Albuquerque, N. M., plan a hospital at Albuquerque to cost $2,750,000. Gordon Ferguson and Donald P. Stevens, Albuquerque, are architects for the hospital.

Hotel—Hilton Hotels Co., Lubbock, Tex., plans hotel and power plant at Lubbock to cost $2,400,000. Furr & Martin, Lubbock, are architects.

Dormitory—Marietta College, Marietta, O., is planning campus improvements, including renovating dormitories, constructing student union building and dining hall. Estimated cost is $1,250,000.

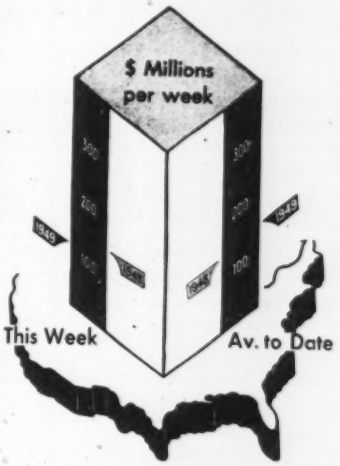
Dormitories—State of Illinois, Springfield, Ill., plans to take bids about Jan. 9 for dormitory at Illinois State Normal College, Normal, Ill. Schaefer, Hooten & Wilson, Bloomington, Ill., are architects. Bids will be opened about the same time for a dormitory at Northern Illinois State College, DeKalb, Ill. Each project will cost 1,047,000. C. Herrick Hammond, Springfield, is state architect.

Schools—Joseph P. Duffy Co., Chicago, Ill., has been awarded contract to build schools for School District 218, Blue Island, Ill., at about $1,500,000. Charles Wheeler Nichol, Chicago, is architect.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Dec. '49	480.32	230.89
Building Cost	Dec. '49	353.07	190.86
Volume	Nov. '49	265	116



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Dec. 15 1949	Cumulative 1949 (50 wks.)	1948 (51 wks.)	% chge av.wk.
Federal	$5.2	$1,156.9	$929.1	+27
State & Mun.	38.9	3,027.9	2,601.0	+19
Total Public	$44.1	$4,183.9	$3,530.1	+21
Total Private	75.3	3,751.2	3,437.9	+11
U. S. Total	**$119.4**	**$7,935.1**	**$6,968.0**	**+16**

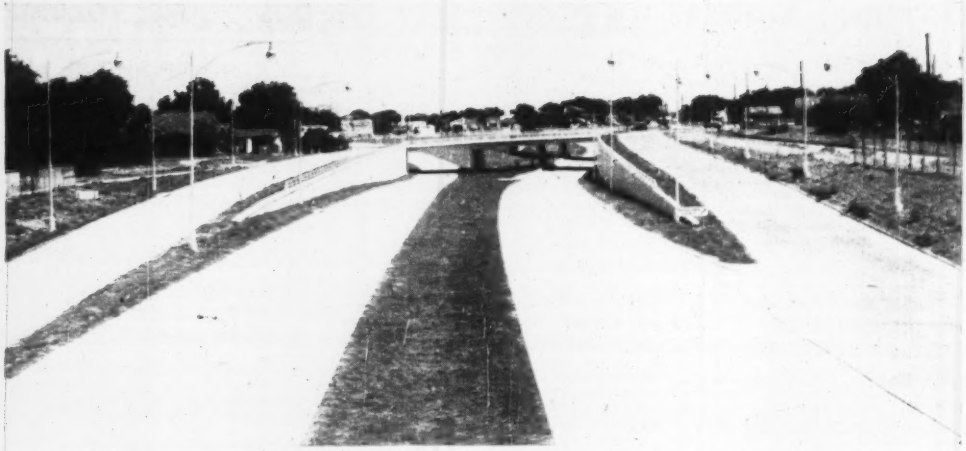
Contracts by type of work

	This Week	Cumulative 1949 (50 wks.)	1948 (51 wks.)	% chge av.wk.
Waterworks	$2.3	$204.1	$205.3	0.0
Sewerage	1.0	270.5	224.9	+23
Bridges	6.4	347.1	291.4	+21
Highways	7.6	874.0	973.8	−8
Earthwork, Waterways	2.9	516.2	503.0	+5
Buildings, Public	18.5	1,678.4	1,116.8	+53
Industrial	10.3	932.9	1,046.5	−9
Commerical	61.6	2,329.3	1,802.8	+32
Unclassified	8.8	782.5	803.6	0.0

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (50 wks.)	1948 (51 wks.)	% chge av.wk.
NON-FEDERAL	$5,388.6	$5,105.9	+8
Corporate Securities	2,118.0	2,650.5	−2
State and Municipal	2,885.7	1,963.1	+50
U. N. Building Loan	....	65.0	...
Federal-Aid Highway	385.0	427.3	−16
Federal	1,748.2	1,558.9	+12
Total Capital	**$7,136.9**	**$6,664.8**	**+9**



WELL-LIGHTED, well-ramped and well-built—the first section of San Antonio's new expressway will soon be ready for traffic.

Speeding Up San Antonio Traffic

TEXAS IS NOTED for its abundance of wide-open spaces—but not when it comes to building urban expressways. San Antonio's new four-lane divided expressway ran through about as many right-of-way problems per mile as any other urban expressway built in recent years. (The first 2.12-mi. section, costing $8,000,000, will be completed by next September.)

The expressway is only 2½-mi. long but its two 25-ft. pavements pass under five streets, two railroads and two pedestrian overhead crossings. Both pavements also pass over one street and cross one street at grade. The outbound lane crosses over San Pedro Creek twice and, at one point, even crosses above the inbound pavement.

One of the problems was that of removing 30 houses from the right-of-way at a time when city housing was at a premium. They were removed well ahead of the start of construction, and grouped to form a small settlement adjacent to the expressway—a job simplified by building all streets and sidewalks and installing all service facilities before a single house was moved. There was no opposition to moving due to a good job of public relations by the City-County Planning Board and the Texas Highway Department.

In addition to the usual location problems, two creeks traversing the right-of-way had to be moved. One of these, San Pedro Creek, is a spring-fed stream famous as a source of water supply for the early Franciscan monks who built the Alamo. Right-of-way limitations prevented its being relocated outside the construction area. As a result, for nearly ½ mile, it flows in a new concrete-lined channel between the two expressway pavements.

Entrance and exit ramps, 24-ft. wide, and built on grades up to 8 percent, connect the expressway with three main cross-streets, while nearly a mile of new 33-ft. frontage streets on each side of the expressway serves existing cross-streets in the limited access stretch of expressway proper.

NO TRAFFIC HAZARDS for pedestrians—they go up a single-column ramp (at left) and over the expressway on a three-hinged steel-arch pedestrian overhead (at right).

Expressway pavement, ramps and frontage streets total the equivalent of nearly eight lanes of new pavement for 2¼ mi. of expressway.

The outer end of the expressway begins just north of Woodlawn Ave. with a connection to U. S. Highway 87 leading northwest to Junction, Texas, where connection is made with U. S. Highway 290 leading west to El Paso and Los Angeles. The new expressway runs southeast to Martin St. where traffic will fan out onto four streets to downtown San Antonio.

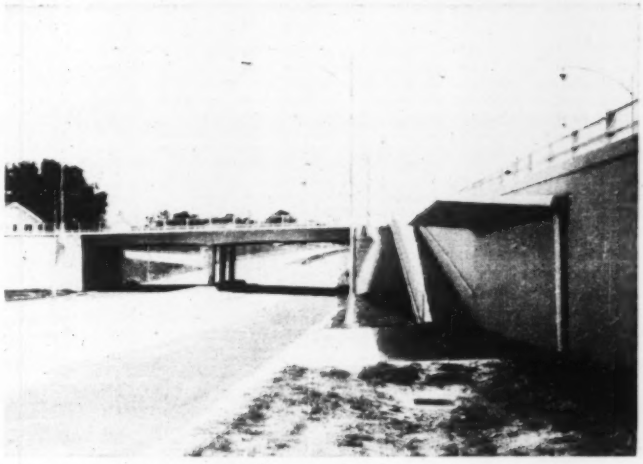
To speed downtown traffic

The outer 1.3 mi. of expressway was completed and opened to traffic this year (1949). Two other contracts (see accompanying table) covering the remaining 0.8 mi. of expressway will be completed by next summer. Designed for an anticipated peak-hour traffic of 1,400 vehicles in each direction, the completed facility will relieve badly-congested traffic on Fredericksburg Road and adjacent streets, speeding it to and from the downtown section.

As the completed expressway takes shape, the many innovations of its design and construction become apparent. Basically, these functional concepts include: Safety factors for through traffic on the expressway and that entering or leaving it; pavement and curb design to encourage maximum flow of traffic; wide frontage streets, or service roads; attractive bridges; safe pedestrian crossing; and a system of street lighting designed to take hazards out of night driving.

Where right-of-way width permits, the 25-ft. expressway pavements are separated by a 15-ft. sodded median inside of 4-in. mountable curbs.

In restricted areas, the pavements are separated by a 4-in. raised concrete median, 6 ft. wide, which carries a 24-in. high reinforced-concrete divisor along its center line. This high divisor affords positive protection for opposing traffic and bridge piers located between the two expressway pavements. Its concave faces are designed to guide any car striking it back onto the pavement without upsetting.



NO CONGESTION AT BUS-STOPS—an extra lane permits buses to pull out of traffic for loading and unloading.

Two-color illumination is used to differentiate between the expressway and the ramps. Mercury-vapor, 16,000-lumen lamps mounted 30 ft. above the pavement furnish 0.8 foot-candles for the expressway. Ramps carry sodium-vapor, 10,000-lumen lamps mounted 25 ft. above the pavement.

The luminaires are suspended from tapered steel Monotube lighting standards, modified according to designs prepared by the Texas Highway Department. Lighting standards are spaced 200 ft. apart. Those along the outside of the expressway pavements are staggered 100 ft. with each other.

Curb inlets for roadway drainage are unusual in that they contain no gratings either in the pavement or curbs. They are simply unobstructed openings in the curbs, 4-in. high by 16 ft. long, discharging into reinforced concrete catch-basins.

Simplified drainage systems

The general drainage scheme involves two collector systems—one to intercept the surface water along the top of cuts, and one to handle the roadway drainage in the depressed sections. At various points, the two systems discharge into common manhole structures and storm-water flows through single lines to natural drainage channels.

As a point of construction economy, wherever feasible, the header lines for the upper and lower collector systems

ROADWAY DRAINAGE discharges into catch-basins through novel curb-inlets (right) located at low point in the grade line. Pavement is beveled (left) to leave a 4-in. vertical opening in the 16-ft. curb inlet. Catch-basins are reinforced concrete.

were installed in a single trench. The trench was excavated, the lower header installed, then the trench was backfilled and tamped up to the invert of the upper header, which was then laid, and the trench backfilled to grade.

The expressway pavements are designed to take a beating from heavy traffic, and to last a long time. They are 8-in. reinforced concrete slabs on 16 in. of compacted and asphalt-sealed subbase as a foundation course.

Ramp pavements are 8-in. reinforced concrete on 8-in. of compacted and sealed gravel. Frontage streets are 7-in. reinforced concrete pavement, on an 8-in. compacted and asphalt-sealed subbase. They are surfaced with 1½-in. of asphaltic concrete.

Extra precautions were taken to make bridge-approach embankments strong and stable. The 8-in. reinforced concrete roadway pavement was placed on 16 in. of gravel placed in two 8-in. layers. The first layer was installed, compacted and sealed with 0.3 gal. of hot asphalt per square yard. The second layer then was added, sealed with two applications of hot asphalt at 0.3 gal. per sq. yd. each, and covered with a thin layer of fine cover-stone, ready to receive pavement.

All concrete pavement, including bridge decks, is given a woodfloat finish to make the surface more skid-resistant and to eliminate surface checking. It is cured 8 days with saturated cotton mats.

Colored concrete for safety

Three colors are used in and on the concrete surfaces, for specific purposes. A 12-in. wide by 4-in. high mountable divisor separating the outer expressway lanes and a turnout lane at sheltered bus-stops is painted orange as a warning precaution.

Exit ramps and the turnout lane at bus-stops are finished with a light coating of iron oxide pigment worked into the fresh concrete, giving it a black color. The same treatment was given the outer 18 in. along each side of the 6-ft. concrete median strip to make the curb lines more visible at night. Median-strips are not reflectorized. Spill-through slopes at abutments carrying bridges spanning the expressway have a green-colored concrete finish to match the color of adjacent sodded cut slopes.

The bridges are beautiful

Many unusual innovations also are incorporated in the bridges, whose neat and attractive lines add beauty to the road. One pedestrian overhead—a three-hinged arch of 131-ft. span and carrying a 4-in. reinforced concrete slab—connects reinforced concrete approach ramps on a 10-percent grade supported on one-legged bents.

One five-span continuous reinforced concrete deck girder bridge spanning the expressway contains 525 cu.yd. of concrete above the abutment seats and tops of pier columns. This entire 525 cu.yd. of concrete was placed in one continuous 10-hr. operation, including the screeding and finishing of the roadway slab and sidewalks.

This remarkable operation was performed with the aid of two 34-E pavers and two cranes for placing the concrete. Pavers and cranes started at one end of the bridge and progressed to the other end, operating on previously placed earth dikes built along each side of the bridge.

The longest rigid-frame bridge has a clear span of 79 ft., while a second one has a span of 77 ft. The two railroad bridges are through plate-girder spans.

The longest structure on the expressway is, in reality, two independent bridges, each made up of rolled-beam simple spans carrying a reinforced concrete deck. One of the bridges, containing twelve 50-ft. beam spans plus 150 ft. of continuous slab spans on poured-in-place concrete pile piers at 50 ft. c. to c., carries the inbound traffic over an existing street. The other, containing thirteen 50-ft. spans, carries outbound cars over the same street and over San Pedro Creek.

These two bridges are on 4-deg. and 4-deg. 50-min. horizontal curves, respectively. Each has a 24-ft. roadway between 4-in. mountable curbs. These curbs were purposely left low to encourage drivers to drive close to them, thus utilizing the full width of roadway.

Pedestrians are not permitted on these bridges, but a reinforced-concrete slab extends 3½ ft. from inside face of curb to the railing along each side of both structures. These so-called "bridge-shoulders" serve two purposes—as an emergency partial turnout for distressed vehicles, and to impart a sense of security to the driver since the handrail is 3½ ft. outside of the roadway curb line.

Handrails are heavy elliptical steel pipe welded between steel handrail posts anchored in the outside of the bridge shoulders. Steel brackets bolted to the outside roadway stringers were used to support timber forms for the overhanging concrete bridge shoulders. These proved more successful than conventional needle beams as they permitted accurate adjustment for the vertical curve and formed an unyielding support when the concrete was placed.

No roadway drains are used in these rather long bridges, and all roadway joints over the piers are filled with a plastic asphalt-rubber compound to prevent seepage water discoloring the substructure. Storm water is picked up at each end of each bridge and piped into the expressway drainage system. Metal bearing masks at each pier cover the rocker supports for the outside stringers and hide the openings between ends of stringers. The final field paint coat on all bridges on the project is aluminum.

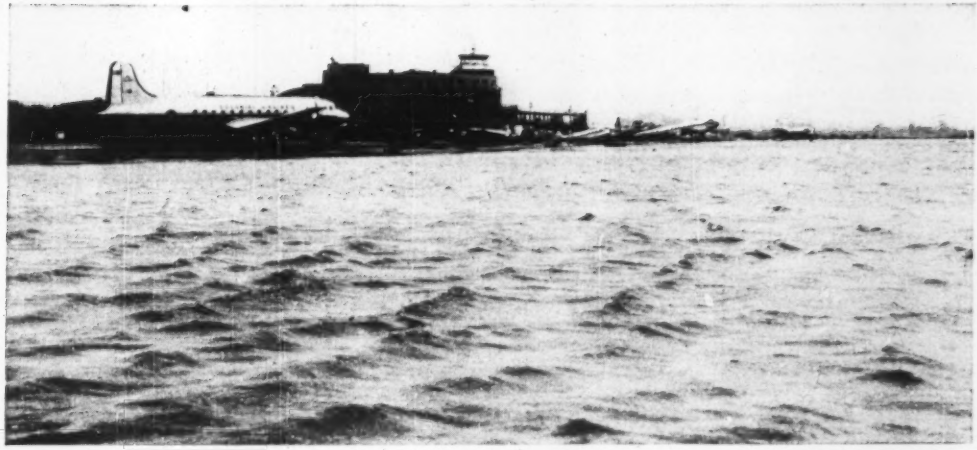
Engineers in charge

The entire expressway was designed by the Texas Highway Department, assisted by local consulting engineers. All design and construction is under the supervision of J. L. Dickson, engineer-manager, San Antonio Expressway, reporting to D. C. Greer, state highway engineer. R. A. Bossy is supervising urban engineer; John J. Fuller, supervising design engineer; and R. O. Lytton and R. G. Kirk, supervising construction engineers on the project.

TABLE OF CONTRACTS AND CONTRACTORS

Item	Contractors*	(Awarded)	(Completed)	(Mi.)	Contract Cost
Improve Martinez Creek Channel	Colglazier & Hoff, Inc.	Aug. 1946	Feb. 1947	—	$15,000
Bridges, Detours & Expressway Spur	H. B. Zachry Co.	June 1947	June 1948	0.64	360,000
Expressway	H. B. Zachry Co.	July 1947	July 1949	0.71	1,643,000
Expressway	M. B. Killian & Co.	Oct. 1947	Nov. 1949	0.59	1,549,000
Expressway	McKenzie Const. Co.	Aug. 1948	Mar. 1950**	0.39	1,111,000
Expressway	M. B. Killian & Co.	Mar. 1949	July 1950**	0.43	1,173,000
Frontage Streets	H. B. Zachry Co.	July 1948	May 1949	0.872	352,000
Street Extensions	Killian-House Co.	May 1949	Sept. 1950	1.49	242,000
			Total Contract Cost		$6,445,000
			Total Right-of-Way Cost		1,600,000
			Grand Total Cost, exclusive of engineering		$8,045,000

* All of San Antonio, Tex.
** Estimated



NO PLACE TO GO—On Oct. 31, 1947, tides inundated half of airport. Subsequent construction has succeeded in . . .

Saving LaGuardia Airport

THREE YEARS AGO it looked as if New York's LaGuardia Airport would have to be put on a limited-use basis during a $17,000,000 rehabilitation job (ENR Jan. 1, 1947, p. 10).

Almost half of the field—the part that had been made by fill over the silt of Flushing Bay—was subsiding at 4 in. per year, with a maximum settlement of 9 to 12 ft. expected in 50 years. Already this portion had settled about 3 ft., to the point where a 9-ft. tide would flood it. (At least one 9-ft. tide can be expected every year, usually in the fall.)

Today the Port of New York Authority, operator of the field, can look upon high water without concern, thanks to protection works completed in 1949. Fully as important, the protection cost only about $1,300,000 and was accomplished without limiting airplane field traffic.

This rehabilitation job involved two principal structures:

(1) A marginal dike, 13,700 ft. long, part of which was built over

TEST PROGRAM THAT WAS BASIS OF LaGUARDIA REHABILITATION DESIGN

Purpose of test:
To determine an economic method of stabilizing the subsoil and restoring the field to its proper level.

Location of test:
At field's south margin.

Conditions at site:
Surface elev. +9.0; mhw. +6.8; mlw. 0.0; bottom of land fill (1937—rubbish), El. −11; lower limit of soft organic silt, El −70; sand beneath silt. The silt has fair horizontal permeability, poor vertical permeability; its moisture content ranges from 45 to 135 percent by weight of solid material.

Methods tested:
(1-3) Placement of vertical sand drains to El. −70, at three different spacings (both ways), 8 ft., 11 ft. and 14 ft., with six 2-ft. increments of new fill on the three sand-drain test areas; (4) placement of Franki piles (similar to vertical sand drains, except ejection of sand from mandrel is accomplished by a combination of hydraulic and mechanical force); (5) electro-osmosis (utilizes flow of direct current between electrodes spudded into the ground).

Test Layout:
Five plots in line parallel to waterfront, each 100x100 ft.; three sand-drain plots at the interior, and the other two plots (Franki piles and electro-osmosis) at the ends.

Instrumentation:
Within each plot, piezometers and settlement plates; outside each plot, at various distances, settlement plates and lateral-displacement plates.

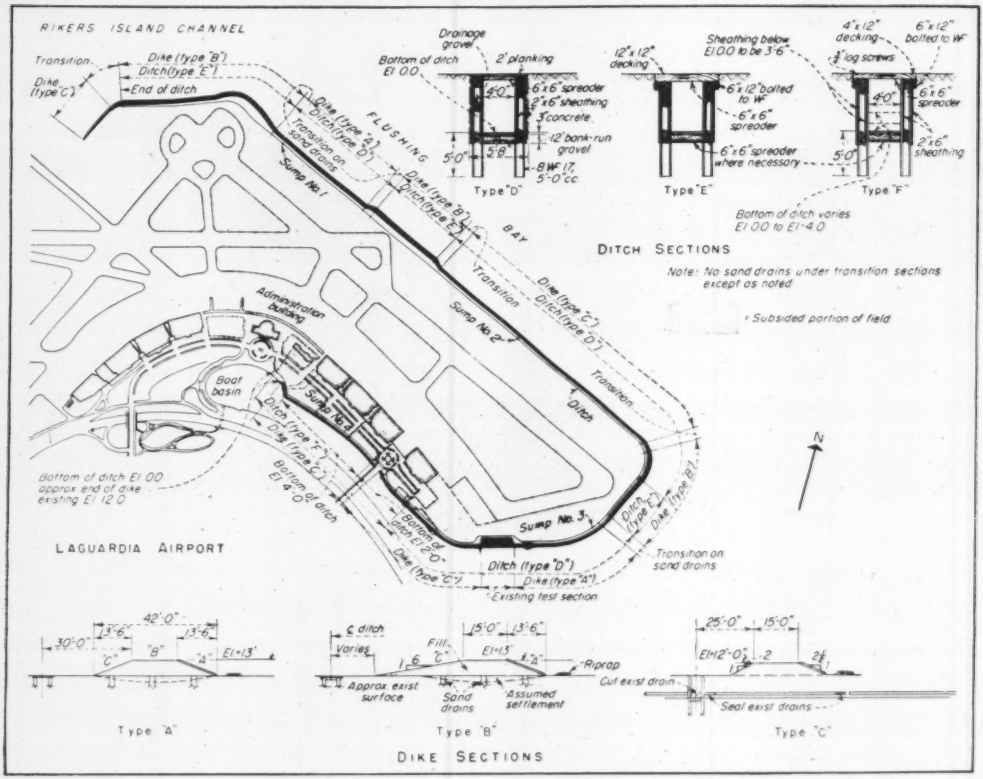
Test results:
LATERAL SUBSOIL MOVEMENT—About 50 ft. outshore of the test area, outward movements within silt slowed down after seven months, at a maximum of 0.6 ft. (Results of electro-osmosis and Franki pile tests were inconclusive, the former test being considered insufficient in scope and the latter test having been abandoned as too expensive after one-fourth of the piles had been driven.)

SETTLEMENT in each sand-drain plot is tabulated against number of days after sand-drain installation:

No. days	Spacing of drains		
	8 ft.[1]	11 ft.[2]	14 ft.[3]
20	0.5 ft.	0.2 ft.	0.2 ft.
40	1.0	0.4	0.4
80	2.3	1.6	1.0
160	3.7	3.4	2.6
320	5.1	5.1	3.9
640	6.5	6.5	5.5

1. Surcharge completed at 64 days; 2. at 78 days; 3. at 105 days.

Conclusion:
To consolidate the subsoil in a reasonable time and to increase the subsoil's shear value, sand drains should be driven at 14 ft. both ways. Somewhat faster consolidation, obtainable by closer spacing, does not justify expense of more drains.



DESIGN FOR REHABILITATION—Dike and interior-toe ditch around field's subsided portion (shaded) now hold back high tides, take care of field drainage.

vertical sand drains spaced at 14 ft.

(2) An inside toe-drain 14,000 ft. long—with sumps for pumping during high water—to handle storm drainage from the field.

Dike construction was sufficiently complete in October, 1948, to keep that year's first 9-ft. tide off the field. The whole job was completed by the 1949 high-tide season.

Tests conducted

In preparation for the work, the Port of New York Authority conducted tests to determine an economical rehabilitation program. They appointed a consulting board composed of William H. Mueser, O. J. Porter, and the late F. R. Harris, to direct the tests, and they engaged J. Rich Steers, Inc., New York contractor, to perform the field work.

Based on test results, the board recommended the toe-drains and dikes. For keeping occasional high tides off the field, such a dike would be much cheaper than general field refilling, with the necessary accompanying precautions against mud waves. These precautions would have consisted of an under-runway system of vertical sand drains to hasten consolidation and prevent horizontal displacement of the 70-ft. layer of soft inorganic silt beneath present field fill. Moreover, refilling and sand-drain placement would have put certain runways out of service, interrupting flying operations during some wind conditions.

But a dike could be built without interference to flying. Experience at other airfields indicated the possibility of operating safely inside a dike, even though the field elevation was lower than surrounding waters.

The LaGuardia dike (around the field's low areas) was to be built to resist erosion by waves. Where underlying mud was deepest and least stable, dike construction was to be preceded by placement of vertical sand drains, spaced at 14 ft., in three rows 14 ft. apart. These drains would hasten consolidation beneath the dike, increasing the subsoil's shear value and reducing the danger of mud waves that would sweep the dike away.

Orderly settlement of the dike was foreseen. To maintain the function of the dike, its top is being raised at six-month intervals. When the dike is stable, and it is felt that the underlying "wall" of consolidated material will contain the field, it will be possible to raise the grade of the field by a simple filling and paving operation. So far, dike settlements have averaged 0.8 ft.

Design for rehabilitation

The design resulting from the board's recommendations is shown in the accompanying drawing. Top of dike is kept at El. +12.0 and +13. Bottom of drain ditch varies from El. 0.0 to −4.0. Sand drains extend to within a few feet of the sand stratum,

ROLLING DIKE—Final compaction of anti-erosion dike surface performed by small roller, with aid of special crane rigging.

GRAVEL-PACKING—Car on plank rails positions hopper for placing 6-in. thick gravel lining between timber sheathing panels.

whose average elevation is −70.0. A well-graded sand, silt and clay, obtained from a nearby borrow pit, constitutes the dike fill. It is topped by surface treatment as follows: inside slope, ("C") graded and treated with one gallon of an asphalt emulsion per square yard; top, ("B") 15 ft. wide, compacted and treated with two coats of liquid asphalt, at one-fourth gallon per square yard per coat; outer slope ("C") graded and topped by a 5-in. broken stone course and a 2-in. asphaltic concrete course. Riprap lies outside the dike, to reduce erosion from wave action.

Toe-drains are permeable ditches with gravel-packed walls, and bottoms composed of 12 in. of gravel topped by 3 in. of concrete. Principal wall support comes from timber and steel frames on 5-ft. centers. Vertical frame members are steel 8-in. WF sections driven 5 ft. below the invert. Timber spreaders just below ground level complete the frames, except where additional spreaders are required below invert level. Gravel packing is contained in the walls by twin open-jointed panels of 2x6 sheathing. The panels bear on the inner and outer flanges of steel sections, with a 6-in. space for gravel in between. The whole structure is decked with timber.

The ditch intercepts all existing field drains. Additional work included plugging existing gravity drains outside the ditch, and providing new outfalls, including outfalls from pump sumps.

Field construction work

When the design was completed, a contract was let to J. Rich Steers, Inc., low bidder, at $1,034,100. (The tests cost $180,000). For the initial operation of driving 1,300 sand drains, the owner supplied a pipe mandrel, sand skip and driving leads. This equipment was rigged to a crawler crane. (La Guardia sand drain placement was described in ENR, Aug. 28, 1947, p. 291. For similar work in New Jersey, see ENR, July 21, 1949, p. 42). At the height of work, 24 drains averaging 74½ ft. in length, were driven per day.

Settlement plates placed in dike

Before dike fill began, the contractor installed settlement plates at 200-ft. intervals along the centerline. During construction, pipes were built up from these plates inside vitrified clay pipe sleeves, to project above the dikes and allow continuous observations for settlement in the dike areas. Dike fill was deposited in 8-in. layers and spread by bull-dozers. Depending on moisture conditions, disk harrows dried the fill or sprinkler wagons dampened it. Compaction was performed by sheepsfoot, rubber-tired and three-wheel rollers. The finished surfaces were rolled by a small two-wheel tandem roller moving across the centerline, and assisted on the slopes by a crane rigged with a hoisting-line pulley through which the drag line worked. The drag line tugged the small roller up the slope. (Because the dike was finished long before the ditch, ponds formed inside the dike, and waves caused some erosion at the dike's inside toe).

The drainage ditches were excavated by dragline, the short framing piles being driven after excavation. Bracing was installed, prefabricated wall panels were slipped behind the pile flanges, and the structure was backfilled. Gravel for the invert and wall packing was placed through a traveling chute hopper, by crane and clamshell bucket. Then decking was added.

It has been mentioned that the work was carried out without interference to flying operations. A few regulations written into the specifications took care of this.

First of all, flying operations had the right of way over construction. This applied specifically to areas within 250 ft. of all runway centerlines. Construction equipment and materials were taken into runway zones only after clearance with airport officials, and they were moved outside the zones whenever work ceased. Moreover, the contractor could be required to move outside the zone at a moment's notice when flight operations switched to that zone, or when other emergencies arose. The contractor provided a watchman to relay any emergency warnings from the control tower to the working forces, so those forces could get their equipment out of the way promptly.

Furthermore, all openings in the ground had to be closed during flight operations on adjacent runways, and during non-working hours. Ditch work, for instance, was covered at night by uncut lengths of 12x12 timbers.

Compliance with runway clearance regulations was not difficult, except in the case of sand-drain driving which involved moving the crawler crane, with its 125-ft. rigid leads, on and off location. The contractor would work this rig within 275 ft. of a runway centerline, then when flying was scheduled for other runways, he would work 14 hours a day inside the restricted zone (providing the wind didn't change in the meantime.)

Half of the cost of these repairs was borne by the Civil Aeronautics Administration. For the Port of New York Authority, John M. Kyle is chief engineer and R. J. Winters was resident engineer. Dick Tower was superintendent for J. Rich Steers, Inc.

DESIGN TIME was saved by calculating stresses in this high-level, three-span cantilever deck truss bridge at Akron, Ohio by the simplified method of tabulated stresses described herein, which utilizes influence-line principles.

Tabulated Stresses Save Design Time

John B. Scalzi

Asst. Professor of Structural Design
Case Institute of Technology
Cleveland, Ohio

CALCULATION of maximum stresses for any type bridge structure ordinarily is performed by the influence-line method, requiring laborious and detailed computation of the unit ordinates for all members. The following short-cut method of tabulating the stresses, however, saves considerable design time; it utilizes influence-line principles, but arrives at the maximum stresses for a group of members simultaneously and lists them in the same table for easy reference.

A time-saving feature of the tabulation is the fact that the computations can be performed by the operator of a calculating machine, permitting the designer to concentrate on other major items of design. The method was developed for live-load stresses in a deck-type cantilever bridge (Fig. 1) such as the new high-level cantilever bridge at Akron, Ohio (ENR Aug. 25, 1949, p. 18). It was also used for studies of a similar structure of greater span length. Dead-load stresses may also be calculated by this method if they are assumed to act at the top panel points.

The derivations presented are for only one type of anchor span. The method has been extended and applied to suspended spans, cantilever arms and anchor spans with double cantilevers.

The tabulation is an automatic summation of the influence-line ordinates for all members of one type.

General equations for anchor span

The maximum stress in all top-chord members of a truss is produced when all the panel points are loaded. A basic knowledge of the principles of influence lines allows the designer to visualize the influence line for the top chord members to be a triangle with a base equal to the span, with the maximum ordinate occurring with the load at the point about which moments must be taken to evaluate the stress. The stresses in the top-chord members are found directly since the chords are horizontal (for this illustration) and the depth of the truss at a given panel point is the moment arm of the force in the member.

The conventional panel-point method will be used for a uniform loading. Equations will be developed also for the application of a single concentrated load. Symbols are defined in Table I.

For the application of uniform loading as panel loads, the left reaction is equal to the right reaction by symmetry. Therefore:

$$R_L = R_R = \frac{1}{2}(N-1)P$$

Let section 1-1 be a cutting plane in any panel cutting the top chord as shown in Fig. 2. The top-chord stress is determined by summing the moments of all forces to the left of the section and dividing by the distance D to the top chord.

$$\Sigma M_n = R_L n L_1 - P \sum_{1}^{n-1} (n-1) L_1$$

Substituting for R_L and expanding, the summation yields:

$$F_1 = \frac{\Sigma M_n}{D} =$$

$$-\frac{PL_1}{2D}[n(N-1) - n(n-1)]$$

For a concentrated load, P_3, at joint n, the left reaction is determined by taking summation of moments of

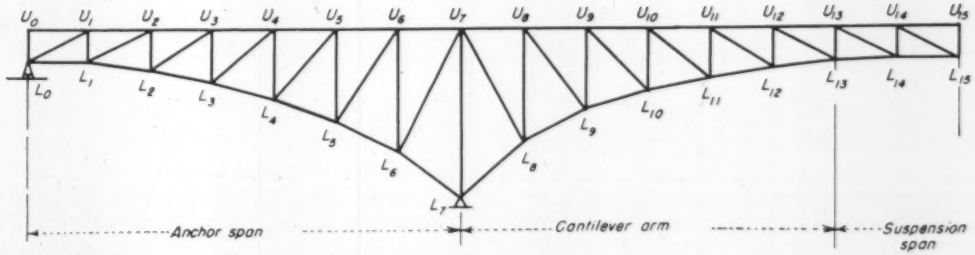


Fig. 1. TYPICAL LAYOUT of a cantilever bridge.

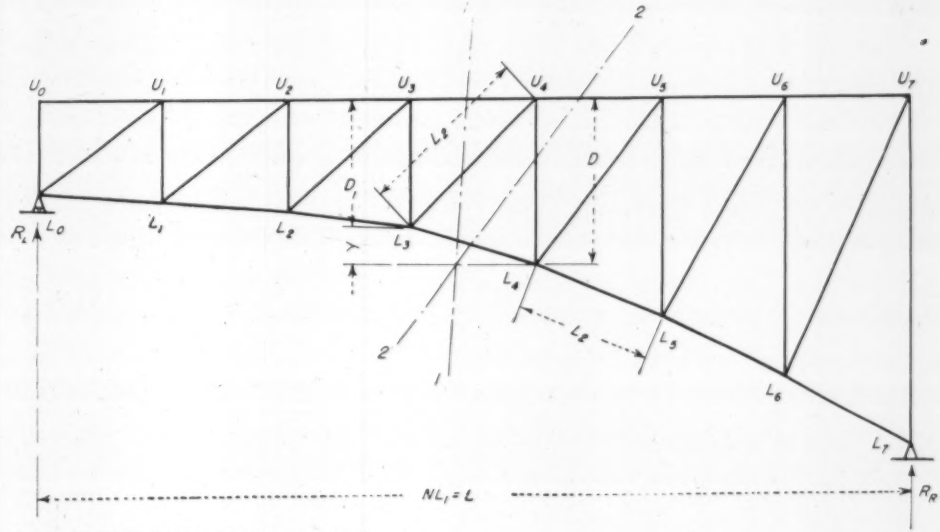


Fig. 2. ANCHOR SPAN with sections analyzed.

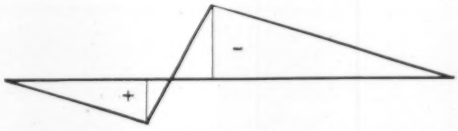


Fig. 3 TYPICAL INFLUENCE LINES for web members.

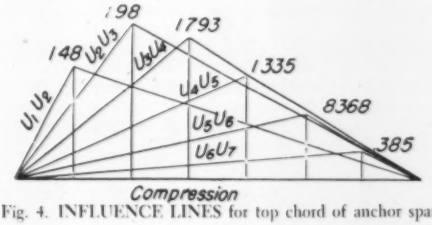
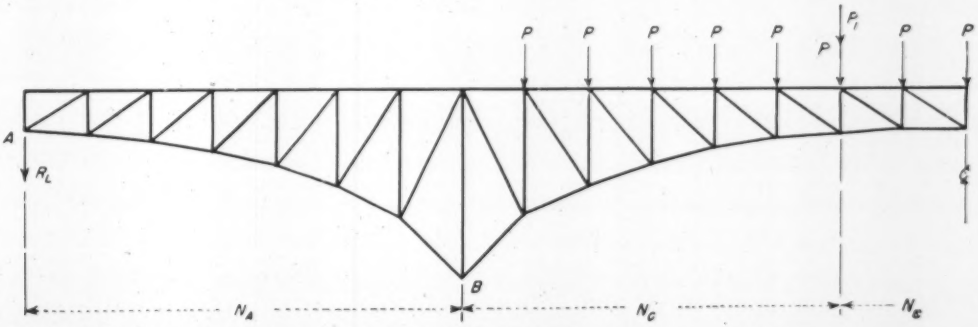


Fig. 4. INFLUENCE LINES for top chord of anchor span.



PANEL POINT LOADING of concentrated loads for calculation of the left reaction, R_L.

forces about the right reaction and dividing by the span length.

$$R_L = \frac{P_1}{N}(N - n)$$

$$\Sigma M_n = \frac{P_1}{N}(N - n)(nL_1)$$

$$F_2 = -\frac{P_1 L_1 n (N - n)}{N D}$$

The type of stress in the member is determined from a consideration of the flexural action of the truss. In this illustration, the general equations are based on the assumption that the top chord will be in compression. If the evaluation of the equation is positive, then the member is in tension. For a simple deck-span, the top chord is always in compression.

Formulas for lower-chord stresses

The method of loading for a maximum stress in any member of the lower chord is a full load on the span similar to the loading for the top chord. Using section 1-1 (Fig. 2) and following the same procedure as that used for the top chord, the general equations for the maximum stress in the lower chords are as follows: For uniform loading:

$$R_L = R_R = \tfrac{1}{2}(N - 1)P$$

$$\Sigma M_n = [R_L n L_1] - \left[P \sum_{1}^{n-1} (n - 1) L_1\right]$$

The horizontal component of stress is first calculated, thus eliminating the necessity for computing the perpendicular distance from the axis of moments, at the top joint, to the lower-chord member in question.

$$H = \frac{\Sigma M_n}{D} = \frac{PL_1}{2D}[n(N - 1) - n(n - 1)]$$

The stress in the member is calculated by the usual functions of trigonometry.

$$F_1 = \frac{H L_2}{L_1} = \frac{P L_2}{2D}[n(N - 1) - n(n - 1)]$$

The lower-chord expressions assume a tensile stress. For a concentrated load, P_1, placed at the position of the maximum ordinate, joint n, the following equation will express the stress in the member:

$$H = \frac{P_1 L_1 n (N - n)}{D N}$$

$$F_2 = \frac{H L_2}{L_1} = \frac{P_1 L_2 n}{D N}(N - n)$$

Realizing that the influence line for web members is of the form shown in Fig. 3, it is apparent that general equations must be developed for both tension and compression maximum stresses. This is accomplished by allowing the panel loads to approach the cut section from both directions since each stress will be a maximum when that portion of the influence line above or below the base is fully loaded.

The maximum compression stress will occur when the uniform load is distributed throughout the minus area of the influence line diagram. For each diagonal, the diagram will necessarily shift one panel to right or left of that indicated. Therefore, the maximum stress for any diagonal will occur with loads applied at all panel points from the right reaction up to the section cutting the diagonal in question, such as section 1-1 in Fig. 2. The shear in the panel is equal to the reaction ahead of the loads. The vertical component of the diagonal is equal to the shear in the panel plus or minus the vertical component of the inclined lower-chord member, depending upon the direction of loading.

The general equation for the vertical component is:

$$V\,(\text{Diagonal}) = R \pm V\,(\text{Lower chord})$$

The maximum compression for uniform load is determined as outlined below. The reaction ahead of the loads is calculated by summing moments about the other support for all loaded panel points and dividing by the span.

$$R_L = \frac{P}{N}\sum_{1}^{N - N_1}(N - N_1)$$

The horizontal component of the lower chord is determined as previously stated for lower chord maximum stress.

$$H_{L.C.} = \frac{\Sigma M_{N1}}{D} = \frac{R_L N_1 L_1}{D}$$

The vertical component of the lower chord is determined by the ratio of the respective lengths.

$$V_{L.C.} = \frac{H_{L.C.} Y}{L_1} = \frac{R_L N_1 Y}{D}$$

Then the vertical component of the diagonal, V_D, is computed:

$$V_D = \frac{P}{2N}[(N - N_1)(N - N_1 + 1)]\left[\frac{N_1 Y}{D} - 1\right]$$

The stress in the member is determined by the ratio of the lengths.

$$F_1 = -\frac{V_D L_2}{D_1}$$

For maximum tension in the diagonals, the uniform load is permitted to approach from the left until it comes to the cut panel of the diagonal in question. Following the same general procedure as before, the expressions as derived are indicated below:

$$R_R = \frac{P}{N}\left[\sum_{1}^{N - N_1 - 1}(N - N_1 - 1)\right]$$

$$H_{L.C.} = \frac{\Sigma M_{N1}}{D} = \frac{R_R N_1 L_1}{D}$$

$$V_{L.C.} = \frac{R_R N_1 Y}{D}$$

$$V_D = \frac{P}{2N}[(N - N_1 - 1)(N - N_1)]\left[1 + \frac{N_1 Y}{D}\right]$$

$$F_1 = \frac{V_D L_2}{D_1}$$

The maximum stress in any diagonal as a result of a single concentrated load is computed by placing that load at the peak ordinate of the influence line for the particular type of stress desired.

Stresses in diagonals

Therefore, for compression, place the concentrated load at $N - N_1$ panels from left. Then the following equations may be written:

$$R_L = \frac{P_1}{N}(N - N_1)$$

$$H_{L.C.} = \frac{\Sigma M_{N1}}{D} = \frac{R_L N_1 L_1}{D}$$

$$V_{L.C.} = \frac{R_L N_1 Y}{D}$$

$$V_D = -\frac{P_1}{N}\left[N - N_1\right]\left[\frac{N_1 Y}{D} - 1\right]$$

$$F_2 = -\frac{V_D L_2}{D_1}$$

For a maximum tension stress from a concentrated load placed at $(N - N_1 - 1)$ panels from the left, the following equations are developed:

$$R_R = \frac{P_1}{N}\left[N - N_1 - 1\right]$$

$$H_{L.C.} = \frac{R_R N_1 L_1}{D}$$

$$V_{L.C.} = \frac{R_R N_1 Y}{D}$$

$$V_D = \frac{P_1}{N}(N - N_1 - 1)\left((1 + \frac{N_1 Y}{D}\right)$$

$$F_2 = \frac{V_D L_2}{D_1}$$

Stresses in the vertical members

The maximum stress in any vertical member is determined by considering the free body diagram ahead of the cut section, such as that to the left or right of cutting plane 2-2 in Fig. 2. The general approach to establish the equations for the verticals is similar to the method for the diagonals, and only the resulting expressions are noted here.

Truss loaded from right, with $(N - N_1 - 1)$ panels loaded:

$$F_1 = \frac{P}{2N}[N - N_1 - 1][N - N_1]\left[1 - \frac{N_1 Y}{D}\right]$$

Truss loaded from left with $(N - N_1)$ panels loaded:

$$F_1 = -\frac{P}{2N}[(N - N_1)(N - N_1 - 1]\left[\frac{N_1 Y}{D} + 1\right]$$

Concentrated live load, P_1, at $(N - N_1 - 1)$ panels from right reaction:

$$F_2 = \frac{P_1}{N}[N - N_1 - 1]\left[1 - \frac{N_1 Y}{D}\right]$$

Concentrated load, P_1, at $N - N_1$ panels from left.

$$F_2 = -\frac{P_1}{N}[N - N_1]\left[\frac{N_1 Y}{D} + 1\right]$$

Let it be desired to calculate the maximum stress in the top-chord members as a result of a uniform loading that produces 34.8 kips as a panel load, and using a concentrated load of 58 kips. Table I indicates the necessary calculation. The tabulation contains the maximum stress in every top-chord member as a result of a full load on the anchor span and the concentrated load placed at the respective maximum ordinate.

The usual method of plotting influence lines for every member and summing the ordinates, which are then multiplied by the panel loads, yields the results that are shown below. All the influence lines are plotted on the same base line (Fig. 4). The necessary calculations to determine the maximum ordinates are omitted in this discussion.

The calculation of the stresses is as follows:

For uniform loading:

$U_1U_2 = (5.17)(34.8) = -180$ kips
$U_2U_3 = (6.93)(34.8) = -241$ kips
$U_3U_4 = (6.28)(34.8) = -218$ kips
$U_4U_5 = (4.67)(34.8) = -163$ kips
$U_5U_6 = (2.93)(34.8) = -102$ kips
$U_6U_7 = (1.35)(34.8) = -47$ kips

The concentrated-load stress is determined by multiplying the maximum ordinate for each member by the value of the load.

$U_1U_2 = (1.48)(58) = -86$ kips
$U_2U_3 = (1.98)(58) = -115$ kips
$U_3U_4 = (1.793)(58) = -104$ kips
$U_4U_5 = (1.335)(58) = -78$ kips
$U_5U_6 = (0.837)(58) = -49$ kips
$U_6U_7 = (0.385)(58) = -22$ kips

Cantilever uplift at reaction

Since the anchor span must resist the uplift caused by the loads on the suspended and cantilever spans, all the members are subjected to stresses produced by a maximum uplift reaction.

The value of this uplift reaction can also be tabulated for a truss with equal panel lengths throughout.

The summation of moments about point B (Fig. 5) as the axis of moments will be divided by the anchor-span length to yield the value of the reaction at the abutment, A:

$$R_L = \frac{P}{N_A}\left[\sum_1^{N_C} N_C\right] + \tfrac{1}{2}(N_S - 1)P\,\frac{N_C}{N_A}$$

$$R_L = \frac{P}{2}\,\frac{N_C}{N_A}\,[N_C + N_S]$$

where N_A is the number of panels in the anchor span, N_C the number of panels in the cantilever span and N_S the number of panels in the suspended span.

For a concentrated load placed at the end of the cantilever:

$$R_L = \frac{P_1 N_C}{N_A}$$

The stress in all members will be evaluated by considering the free body to the left of the required cutting plane. The following expressions can be developed easily from the principles of statics.

Top chord: $F = \dfrac{R_L\, n\, L_1}{D}$

Bottom chord: $H_{L.C.} = -\dfrac{R_L\, n\, L_1}{D}$

$$F = -\frac{R_L\, n\, L_2}{D}$$

Diagonals: $V_{L.C.} = \dfrac{R_L\, n\, Y}{D}$

$$V_D = R_L\left[1 - \frac{n\,Y}{D}\right]$$

$$F = \frac{R_L L_2}{D_1}\left[1 - \frac{n\,Y}{D}\right]$$

Verticals: $V_{L.C.} = \dfrac{R_L\, n\, Y}{D}$

$$F = R_L\left[\frac{n\,Y}{D} - 1\right]$$

For the illustration cited the left reaction is computed for an anchor span of seven panels, a cantilever span of six panels and a suspended span of four panels.

$$R_L = \left(\frac{P}{2}\right)\left(\frac{6}{7}\right)[6 + 4] = 4.29P$$
$$= 149.3 \text{ kips}$$

TABLE I—TOP-CHORD STRESSES, FOR ANCHOR SPAN

Line No.	Item	Operation	U_0U_1	U_1U_2	U_2U_3	U_3U_4	U_4U_5	U_5U_6	U_6U_7
Uniform load at 34.8K per panel load:									
I	L_1	*	30 ft.	30 ft.	30 ft.	20 ft.	30 ft.	30 ft.	30 ft.
II	N	*	7	7	7	7	7	7	7
III	n	*	0	1	2	3	4	5	6
IV	D	*	16.0 ft.	17.41 ft.	21.63 ft.	28.67 ft.	38.53 ft.	51.20 ft.	66.69 ft.
V	P	**	34.8K	34.8K	34.8K	34.8K	34.8K	34.8K	34.8K
VI	$N-1$	II − 1	6	6	6	6	6	6	6
VII	$n(N-1)$	III x VI	0	6	12	18	24	30	36
VIII	$n-1$	III − 1	−1	0	1	2	3	4	5
IX	$n(n-1)$	III x VIII	0	0	2	6	12	20	30
X	$n(N-1) - n(n-1)$	VII − IX	0	6	10	12	12	10	6
XI	$-\frac{L_1}{D}$	$-\frac{\text{I}}{\text{IV}}$	−1.876	−1.722	−1.386	−1.048	−0.780	−0.586	−0.450
XII	$\frac{L_1}{-2D} \times n(N-1) - n(n-1)$	$\frac{\text{X x XI}}{2}$	0	−5.17	−6.93	−6.28	−4.67	−2.93	−1.35
XIII	F_1	V x XII	0	−180 K	−241 K	−218 K	−163 K	−102 K	−47 K
Concentrated load = 58 K per panel point:									
XIV	P_1	**	58 K	58 K	58 K	58 K	58 K	58 K	58 K
XV	$N-n$	II − III	7	6	5	4	3	2	1
XVI	$\frac{n}{N}$	$\frac{\text{III}}{\text{II}}$	0	0.143	0.286	0.429	0.572	0.715	0.858
XVII	F_2	XI x XIV x XV x XVI	0	−86 K	−115 K	−104 K	−78 K	−49 K	−22 K

* Data to be obtained from layout of truss spans.
** Data to be obtained from previous calculations.

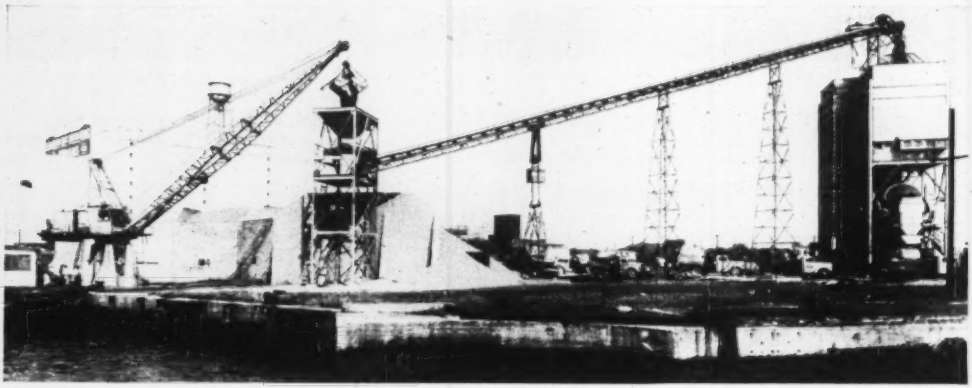
SYMBOLS:

L = Total length of span = NL_1.
L_1 = Length of panel.
L_2 = Length of any member.
N = Total number of panels.
N_1 = Number of panels from reaction ahead of loads to axis of moments.
n = Joint from left reaction to axis of moments.
D = Depth of truss at panel point at which summation of moments is taken for particular calculation.
D_1 = Vertical projection of member.
Y = Difference in height of adjacent members.
P = Panel load due to uniform loading = wL_1.
P_1 = Concentrated panel load.
w = Uniform loading.
H = Horizontal component of stress.
V = Shear on section considered.
F = Total stress in member.
F_1 = Stress due to uniform load.
F_2 = Stress due to concentrated load.
K = One Kip = 1,000 lb.
$L.C.$ = Lower chord.

TABLE II—MAXIMUM TOP CHORD STRESSES IN ANCHOR SPAN DUE TO UPLIFT LOAD

Line No.	Item	Operation	U_0U_1	U_1U_2	U_2U_3	U_3U_4	U_4U_5	U_5U_6	U_6U_7
I	R_L	*	149.3 K	149.3 K	149.3 K	149.3 K	149.3 K	149.3 K	149.3 K
II	n	**	0	1	2	3	4	5	6
III	L_1	**	30 ft.	30 ft.	30 ft.	30 ft.	30 ft.	30 ft.	30 ft.
IV	D	**	16 ft.	17.41 ft.	21.63 ft.	28.67 ft.	38.53 ft.	51.20 ft.	66.69 ft.
V	$\frac{n\,L_1}{D}$	$\frac{\text{II x III}}{\text{IV}}$	0	+1.72	+2.77	+3.13	+3.12	+2.93	+2.70
VI	F_1	I x V	0	+258 K	+414 K	+469 K	+466 K	+437 K	+403 K
Concentrated load on end of cantilever, $R_L = \frac{N_C}{N_A} P_1 = \frac{6}{7} \times 57.8 = 49.5$ K									
VII	P_1	*	49.5 K	49.5 K	49.5 K	49.5 K	49.5 K	49.5 K	49.5 K
VIII	F_2	V x VII	0	+85.3 K	+137 K	+155 K	+154.5 K	+145 K	+133.7 K

* From previous calculations.
** From layout of truss spans.



AGGREGATE-HANDLING EQUIPMENT, from barge to batcher, geared to 6-yd. mixer's production rate. (Stelman photo).

This Concrete Plant Can Put Out 2,000 Yards a Day

FOR EFFICIENCY in concrete-making it may be hard to beat the new central-mix setup of the Camden (N. J.) Lime Co. The plant contains a 6-yd. tilting mixer, the largest yet manufactured, and the right material-handling facilities to keep the big mixer rolling.

When operating on a fast cycle, the mixer can put 2,000 yd. a day into the company's agitator trucks. Such yardage calls for large-quantity materials supply—the kind that water and rail transit can provide. Formerly a Delaware River railroad ferry terminal, the site is ideal for the plant.

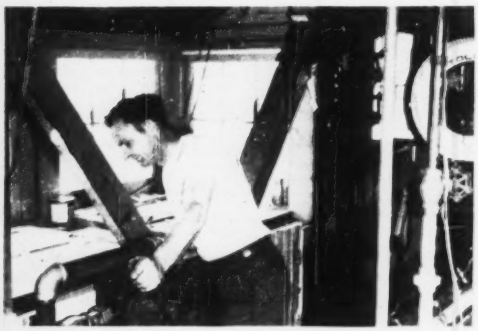
Aggregates come to the plant in barges and cement comes to the plant in bulk cars. There is a 500-ft. rail siding inside the property. A fixed electric-powered revolving crane at the bulkhead unloads barges, with a 3-yd. clamshell, either into one of four open concrete bins with dividing walls radial to the crane's axis, or into a 15-cu. yd. hopper that feeds a 50-hp. electric 30-in. belt conveyor 183 ft. long. At 102 ft. above the ground, the conveyor drops material through a turning chute to one of the mixing plant's four 100-ton topside bins. These bins have pressure plates, top and bottom, that can signal both the crane and the plant operator when a bin is empty or full. Both men can control the conveyor and chute. The operators communicate by visual signals.

Cement-handling facilities

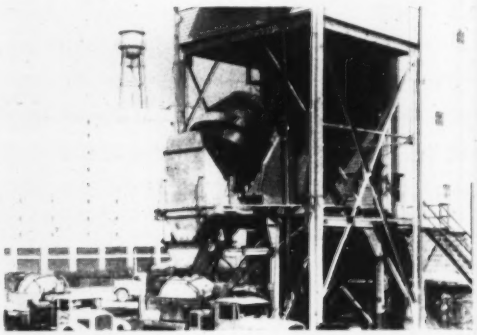
Cement is unloaded from a car at the back of the mixer plant, and conveyed by screw and bucket up to one of three 100-yd. bins in the top of the plant's 20x20-ft. back section. In this case, bin indicators inform a conveyor-control man of bin load conditions. Water from the city mains is fed through a float valve into a 500-gal. storage tank.

To mix a batch the plant operator sets cement, aggregate and water weights on scales, and, with air controls on a panel board, admits the materials to weigh-batch hoppers, one for cement and one for aggregate and water (separate compartments in latter). Cement-feed screws and water valves operate at two speeds, fast for all but last 200 lb. of each, and slow for last 200 lb. A batch can be weighed out in 45 sec. (all weights are recorded automatically). Next, the operator charges the mixer, which turns continuously (100-hp. electric motor). He then lowers a discharge chute to the truck and, when the mix is ready, tilts the mixer pneumatically.

Designer of this new mixing plant is Frank B. Hineline, president of the Camden Lime Co.



MIX IS READY, so plant operator, in perch where he can see mixer and truck, throws tilt valve (ENR photo).



MIXER TILTS, to dump 6 cu. yd. of concrete into agitator truck, which will speed concrete to the customer's job (Stelman).

BOOK REVIEWS

Industrial Cost Estimates

CHEMICAL ENGINEERING PLANT DESIGN—Third Edition, By Frank C. Vilbrandt. 608 pp. McGraw Hill Publishing Co., New York 18 and London. $6.00.

A large amount of cost data which will be of value to industrial designers far outside the field of chemical engineering is presented in a 133-page chapter in this book. Entitled "Preconstruction Cost Estimating," this chapter also includes a comprehensive bibliography.

Also having wide application are the chapters on foundations, drainage, piping installation, pumps and pumping, the building, and power and power transmission. They are written in general terms and so should be found useful in any type of industrial building design work.

Safety on Construction

MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION—Third Revised Edition. 252 pp. The Associated General Contractors of America, 1227 Munsey Bldg., Washington 4, D. C. $3.

SAFETY TALKS FOR CONSTRUCTION & MAINTENANCE FOREMEN — National Safety Council, 20 North Wacker Drive, Chicago 6, Ill. Price, $3.00 to non members; $1.50 to members (less in quantities).

Two guides to safe construction practices have been issued during the latter part of 1949, one by the Associated General Contractors of America and the other by the National Safety Council.

The AGC "Manual of Accident Prevention in Construction" is a revision of an older well-known book, which was last issued in 1938. It has been enlarged considerably, including numerous illustrations. New sections have been added on the following subjects: housekeeping on a construction job; oxygen, acetylene and hydrogen; electric welding; power saws; explosive gases and liquids; motor graders, bulldozers and tractors; and boats and barges.

"Safety Talks for Construction & Maintenance Foremen" containing 58 safety talks by 31 outstanding contractors and engineers, prepared especially for construction and maintenance foremen. Written in the construction man's language, and generously illustrated with photos and drawings of safe construction practices, each talk takes only a few minutes to read.

Prefaced by a page of suggestions for presenting the safety talks to workmen, the booklet dips briefly but effectively into the theory and principles of accident prevention on construction, followed by several tips on first-aid on the job, proper protection to the public, fire hazards and the avoidance of personal injuries on the job. One talk emphasizes good housekeeping on the job. Others describe safe methods of handling and storing materials. Eight safety talks deal with the handling and operation of shovels, cranes, bulldozers and other heavy construction equipment.

Other phases of safe construction include steel erection, concreting, blasting, demolition, welding and electricity on the job.

The National Safety Council also has ready for distribution a 12-page pamphlet entitled "Demolition of Structures" covering the hazards in the demolition of buildings and outlining safe procedures. These pamphlets sell at 80¢ to non members and 40¢ to members.

Also available is a silent strip film of actual operations on construction jobs showing the right and wrong way for handling such operations. It sells for $10 to members of the National Safety Council and $20 to non members.

Suspension Bridge Study

AERODYNAMIC STABILITY OF SUSPENSION BRIDGES—By F. B. Farquharson. 103 pp. University of Washington Press, Seattle, Wash. Limited free distribution.

This is the first, or Part I, in a series of five reports to come from the University of Washington experiment station on this general subject but having special reference to the Tacoma Narrows Bridge.

Part I, which deals with laboratory studies conducted prior to erection in 1941 of the wind tunnel laboratory that was specially designed for investigating dynamic bridge models, includes a historical review of dynamic behavior of suspension bridges, particularly with reference to the modes of motion in and the failure of the Tacoma Narrows span. The report also devotes attention to aerodynamic theories; dynamic models and scale-reduction factors; static wind tunnel tests and observations, in general, on the vibrational effects of wind on suspension bridges.

Part II, now in press, reports mathematical studies. Part III will deal with studies on dynamic models of the design that failed. Part IV is to cover tests of designs confirming stability of the new Tacoma Narrows Bridge design, and Part V will cover later investigations of more general applications, giving special attention to measurements of damping and to predicting aerodynamic behavior from tests on models of suspension bridges.

Specialized Geology

GEOLOGY FOR ENGINEERS—By J. M. Trefethen. 620 pp. D. Van Nostrand Co., New York. $5.75.

The appearance of this, the third book to carry almost identical titles, indicates growing appreciation of the importance of geology to many engineering operations.

The author of this book prepared it primarily as a textbook for use in engineering schools. To that end, he undertook to present only the fundamentals of geology that are of importance to the civil engineer. His selection of material, generally, is good, but part of its value is lost through lack of orderly arrangement. He also could have made more effective use of illustrations. Some that were used are irrelevant to the content.

The author's treatment of the processes of erosion from the viewpoint of their importance to engineers is unusual and a valuable section of the book.

New Engineering Books

NATIONAL TRANSPORTATION POLICY—By Charles L. Dearing and Wilfred Owen. 459 pp. Brookings Institution, Washington 6, D. C. $4.

THE FUKUI EARTHQUAKE, HOKURIKU REGION, JAPAN—Vol. II, ENGINEERING—205 pp. Engineering and Operations Division, Office of the Engineer, General Headquarters, Far East Command, Tokyo, Japan.

DEPRECIATION—By Eugene L. Grant and Paul T. Norton, Jr. 472 pp. Ronald Press Co., New York. $5.

THE STORY OF MAPS—By Lloyd A. Brown. 397 pp. Little, Brown and Co., Boston 6, Mass. $7.50.

APPLIED HYDROLOGY—By Ray K. Linsley, Jr., Max A. Kohler, Joseph L. H. Paulhus. 689 pp. McGraw-Hill Book Co., New York 18 and London. $6.50.

RADIANT HEATING—Second Edition. By T. Napier Adlam. 504 pp. Industrial Press, New York 13. $6.

THE SLIDE RULE—By Lee H. Johnson. 242 pp. D. Van Nostrand Co., New York and London. $3.

(Continued on page 45)

HEAT IMPRISONED

BY K&M "FEATHERWEIGHT"® 85% MAGNESIA PIPE INSULATION

The fuel dollars, the power dollars, the production dollars, are what cannot escape at will, where K&M "Featherweight" Insulation imprisons the heat. K&M "Featherweight" cuts, fits and handles without waste effort and material. Maintenance expense is warded off, too, by the high physical strength of "Featherweight" and by its resistance to adverse atmospheric factors.

Modern high-strength lightness in a material with the inherent multi-cellular structure to keep heat in its place, is achieved by the K&M way of correctly compounding clean Asbestos Fibre with basic Carbonate of Magnesia.

Temperatures to 600° F don't overtax K&M 85% Magnesia Insulation. You can get it in all standard dimensions. You'll get assured economies, as with all the other K&M insulation materials. Your K&M Distributor, an insulation expert, is ready with intelligent help for you on any points.

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

HANDSOME DOES AS HANDSOME IS IN THE PLANT OF J & J CORRUGATED BOX CO., Fall River, Mass.

INSULATION CONTRACTOR: *Armstrong Cork Co.*

Standard thick K & M "Featherweight" with canvas jackets, on all piping.

K & M 85% Magnesia Blocks on all flanges, with cement and canvas jacket finish.

K & M Asbestos Cement and canvas jacket finish, on all fittings.

K&M best in asbestos ®

New Engineering Books

(Continued from page 43)

Gas Transportation System Calculations—By B. Miller. 227 pp. Moore Publishing Co., New York 16. $7.50.

Iron Blast-Furnace Slag Production, Processing, Properties, and Uses—Bureau of Mines Bulletin 479. By G. W. Josephson, F. Sillers, Jr., D. G. Runner. Superintendent of Documents, Washington 25, D. C. 75¢ (paper covers).

A Measure for Greatness: A Short Biography of Edward Weston. By David O. Woodbury. 230 pp. McGraw-Hill Book Co., New York 18, and London. $4.

Applied Mechanics—New Fifth Edition. By Alfred P. Poorman. Fifth edition. 388 pp. McGraw-Hill Book Co., New York and London. $4.

Reclamation Project Data: A Book of Historical, Statistical and Technical Information—489 pp. Superintendent of Documents, Washington 25, D. C. $4.

Proceedings of the American Association of State Highway Officials (1948). Copies can be obtained from the association office, National Press Bldg., Washington 4, D. C. $4.

Reports and Pamphlets

Prevention of Moisture Loss in Soil-Cement With Bituminous Materials—Research Report No. 8-F. Highway Research Board, Washington 25, D. C. 60¢.

Bibliography on Roadside Control—Bureau of Public Roads, Washington, D. C.

The Effect of Various Fasteners on the Fatigue Strength of a Structural Joint—By Kenneth H. Lenzen. Research Reports No. C101. Technological Institute, Northwestern University, Evanston, Ill.

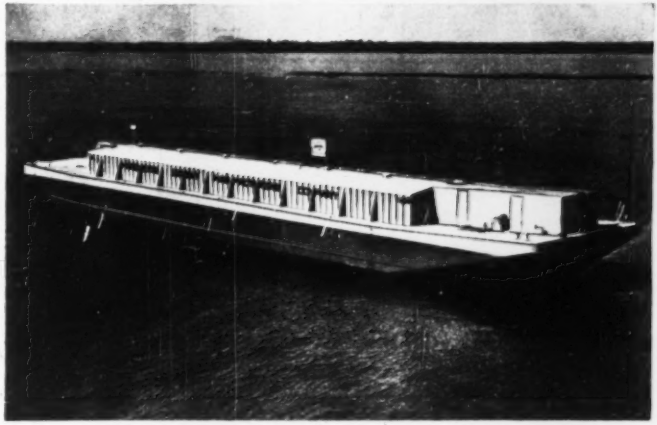
The Farmers' Road Problem—Some Suggestions for its Solution. National Highway Users Conference, Washington 4, D. C.

Sand and Gravel Resources in Northern Ohio—By William H. Smith. Geological Survey of Ohio, Columbus, Ohio.

Proceedings of the Thirty-Fourth Annual Highway Conference—University of Michigan, Ann Arbor, Mich.

Basic Road Statistics, Great Britain 1949—British Road Federation, London, W.C. 1. Price, 1s.

American Business Builds with INGALLS Steel



CEMENT GOES TO MARKET faster and cheaper in this new-type barge built by Ingalls for the Marquette Cement Mfg. Co. Designed for modern handling of bulk cement, it packs extra miles-per-hour in its unique INGALLS IMPROVED BOW (patent pending).

For better, faster barges, consult Ingalls, as so many leaders of industry do. Check Ingalls, too, for fabricated steel for all types of construction. You'll get *quality* work, on-time deliveries, at lowest prices. Inquiries are welcomed.

FABRICATING STEEL IS OUR BUSINESS

INGALLS INDUSTRIES

Main Office: BIRMINGHAM, ALA. — Sales Offices in New York, Chicago, Pittsburgh, New Orleans

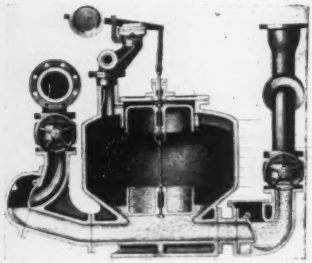
Fabricating plants at Birmingham, North Birmingham, Verona, Pa., Pascagoula, Miss., and Decatur, Ala.

STAINLESS STEEL • STRUCTURAL STEEL • OIL & CHEMICAL STORAGE TANKS • SHIPS & SHIP CONVERSIONS • BARGES • WORKBOATS • REPAIRS

When gallonage is limited
. . . and solids are not

specify

the **SHONE**®
Pneumatic
SEWAGE EJECTOR



For handling crude sewage and sludge—30 gpm up to 1000 gpm—in municipal systems, industrial plants, institutions and city buildings, the famous Shone Pneumatic Ejector is trusted the world over. Wherever uninterrupted operation is essential and particularly where gallonage is limited but solids are not, the Shone is an efficient, safe, dependable answer.

no screens **no sewer gas**
no shredders **no wet well**
no impellers **no danger**
no complicated piping
Sewage can't get in compressor

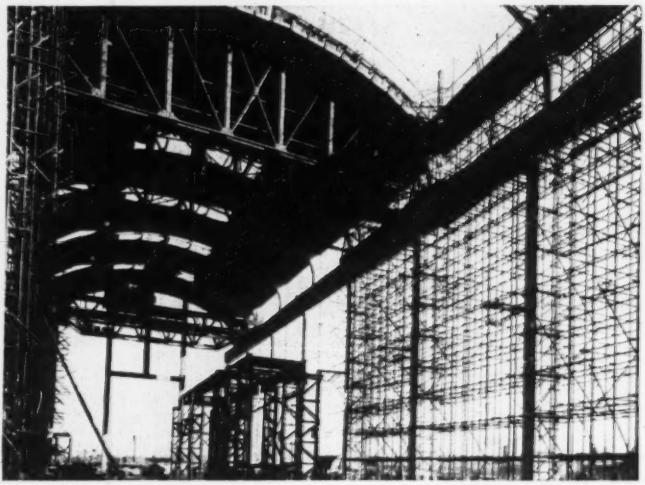
Ejector can be operated under water, and from distant compressor—any number of ejectors from one compressor. Special designs for unusual requirements.

For additional information, refer to Sweet's Files—and for complete engineering data write for Bulletins 4004 and 4303. Please use your regular business letterhead.

YEOMANS
Brothers Company

1445 North Dayton St., Chicago 22, Illinois

DEVELOPMENTS ABROAD



RIDING HIGH—A roof form traveler riding on the permanent crane rails of the new reinforced concrete turbine house of the British Electricity Authority's power plant at Leeds, England, enables the contractor to complete a 70 ft. wide by 32 ft. long bay every 10 days. In the meantime the floor is clear for other work. Two trusses, bracing and working platform make up the traveler. Before each move a temporary steel tie plate is installed across the building at the roof springing line and between the columns at the forward end of the pour. This reduces the stresses when striking the forms and gives support to the roof for an additional 2½ weeks curing of the concrete. Holst & Co. Ltd. is the contractor. British Cement & Concrete Association. (Pickard photo)

Power

Australia—The Snowy River hydroelectric project, long talked about, has now been started. It will be one of the greatest engineering projects ever attempted in Australia providing the commonwealth with a huge and secure power potential for vast new defense industries.

The immediate objective is construction of two stations totaling 400,000 kw. and the provision of 600,000 ac. ft. of irrigation water. The first phase of the project comprises construction of a dam at Adaminaby on the Murrumbidgee River, and the driving of tunnels to divert about two-thirds of the waters of the Snowy River into the Tumut Valley and thence into the Marrumbidgee River. The present work is expected to be completed in eight years at a cost of $130,000,000.

The complete project calls for construction of seven major dams and 20 generating stations with a combined capacity of 1,750,000 kw. It would involve 101 miles of tunneling through the Australian Alps and construction of 540 miles of open races and of three miles of multiple pipeline. The work would require 25 years.

Much of the equipment required will be ordered in Britain. Later J. J. Dedman, minister for postwar construction, may visit the United States to buy machinery which English makers can not supply. However, it is believed that much American equipment, supplied under Lend-Lease, will be available in England.

Venezuela—The Export-Import Bank of Washington has authorized a credit of $5,158,000 to assist in financing the sale by the International General Electric Co. of U. S. electrical, generating and distribution equipment and services required by a 5-year modernization and expansion program for the power system of C. A. la Electricidad de Caracas. International General Electric Co. is financing about half of the $10,368,000 U. S. dollar costs of the equipment and services involved, while the bank, through its credit, will finance the balance.

India—The third and final stage of the Pykara development in Madris, which includes the Moyar Hydro-electric scheme, is in progress.

The development consists of a 705-ft. dam on Pykara River on the Ootacamund-Mysore Road, creating a new reservoir with storage capacity of 2,000,000,000 cu.ft. It will be the biggest so far constructed on the Nilgiris for generating water power.

Initial expenditure on the scheme will be about $6,500,000.

Highways

Mexico—An all-paved link between the United States and the Gulf of California along the west cost of Mexico has been completed with the opening of the road to Guyamas. The modern superhighway runs 260 mi. from Nogales, through Hermosillo, to Guyamas.

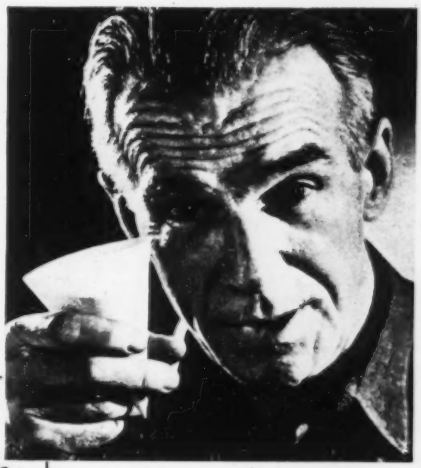
A hard-surface highway from El Paso, Tex., to Mexico City will be completed in a few weeks, and there will be a big opening celebration next March with prominent highway officials of the United States and Mexico in attendance.

While road building in Mexico is at its peak, as far as trunk and other main works are concerned, confidence increases for the achievement of a U. S. loan to buy roadbuilding equipment. This confidence has been expressed by those who are backing the recently-organized Mexican Road Association (Asociacion Mexicana de Caminos) which is advancing a new program to boost the building of feeder and secondary roads. The association has strong backing from various American organizations interested in the extension of Pan American roads and highways and by the Mexican Contractors Association and the Mexican Association of Machinery Importers.

Puerto Rico—The Insular Department of the Interior has asked the planning board for a total of $15,606,500 for its construction program and operating expenses during the forthcoming fiscal year 1950-51, first of a 5-year financial program on which action will be taken by the insular legislature and the governor. The department will invest $4,000,000 in public roads and urban thoroughfares construction and improvement projects during the fiscal year 1950-51. These funds will be matched with federal funds in accordance with the Public Road Administration Act.

Atomic Energy Plant

England—The Ministry of Supply, London, has announced early construction at Capenhurst, near Chester, of its sixth atomic energy establishment. The site covers 150 acres, and when the plant is completed next year it will employ several thousand men.



DIXIE PORTABLE WATER CARRIER
Easily filled, easily carried. Holds four gallons of water. Well insulated, keeps water cool for hours. Sturdily built for long, hard usage in the field.

TIME SAVERS on the job

DIXIE or VORTEX CUPS
and the dixie
PORTABLE WATER CARRIER

Dixie and Vortex Cups are the best investment you can make on a job: You'll save time wasted by frequent work interruptions for trips to the water bucket. And you'll save time lost through worker absenteeism due to colds and other mouth-carried infections that may be transmitted by unsanitary drinking vessels.

Clean, safe, individual Dixie or Vortex Cups are used only once. And the ideal way to use them is with the Dixie Portable Water Carrier which accommodates either flat bottom Dixie or cone-shaped Vortex Cups. With this efficient combination you can deliver cool, clean drinks anywhere on the job, promptly and safely.

DIXIE CUP

"Dixie" & "Vortex" are registered trade marks of the Dixie Cup Company

Write for Description Folder

DIXIE CUP COMPANY, Easton, Pa.

The features you get with Mayari R

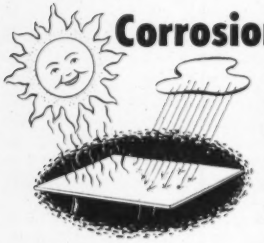
This versatile high-strength, low-alloy steel is helping to improve the designs of a great variety of products including railroad cars, motor vehicles, industrial equipment, fabricated structures and household items. For full information on the properties and applications of Mayari R write for a copy of Catalog 259.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

BETHLEHEM STEEL

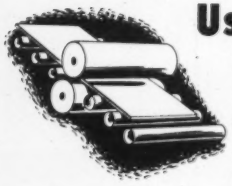
High strength

The 50,000 psi minimum yield point of Mayari R is approximately double that of plain carbon steel, permitting higher working stresses.



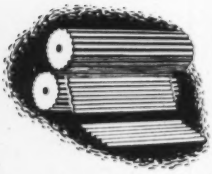
Corrosion-resistance

The atmospheric corrosion-resistance of Mayari R is 5 to 6 times that of plain carbon steel and 2 to 4 times that of copper-bearing steel.



Used as-rolled

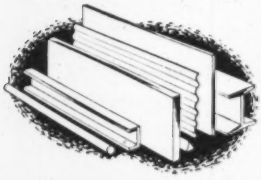
It has advantages of alloy steel without the expense of heat-treatment. Mayari R can be worked hot or cold in the as-rolled condition.



Workability

Mayari R can be formed, sheared, punched, drilled, and welded by the methods used for carbon steel.

Available in many forms



Mayari R is produced in sheets, strip, plates, bars, structural shapes, and cold-formed shapes.

Comparatively low cost

The initial cost of Mayari R is little more than that of carbon steel. This difference is frequently offset by savings in deadweight and maintenance.

Mayari R *makes it lighter... stronger... longer lasting*

MUNICIPAL AFFAIRS

Cleveland Transit body has been re-organized

A 5-man board replaced the city-council dominated 3-man Cleveland Transit Commission on Dec. 1, and assumed not only all of the responsibilities of the former board but also many of the powers formerly controlled by Cleveland city council.

Creation of the new 5-man board was demanded by the Reconstruction Finance Corp. As a condition of its loaning the Cleveland Transit System, municipally owned, $22,200,000 to be used for the development of an east-west rapid transit system and a completion of the modernization program, now well under way, of existing facilities. (ENR–Oct. 27, p. 56.)

Mayor Thomas A. Burke, reappointed to the newly-created board, William C. Reed, William C. Keough and Victor Cohen, members of the former board. New members appointed are M. M. Lucak, who resigned as president of city council to accept the four-year appointment, and Allen J. Loewe, managing director of a Cleveland hotel, named to a one-year term.

Eager to get actual construction work under way on the east-west rapid transit, the new board on the first day of its existence employed the Bauer Surveys Co. and E. C. O'Rourke Surveys Co. to make the basic line surveys, cross section levels and surveys for real estate for the project. These two companies, one working on the east leg of the project and the other on the west leg, will start work immediately.

Yet to be passed by the Cleveland city council is a resolution authorizing issuance of the necessary mortgage revenue bonds to be used as security for the loan to RFC. Such a resolution is expected to be passed before Jan. 1.

Meters Need Help

Unless their installation and operation is accompanied by rigid law enforcement, parking meters fail to create the desired additional parking spaces in downtown areas.

The highway research board of the National Research Council recently completed a survey of ten Midwestern cities where meters have been in operation. A study was made to improve present parking meters.

Research Board checkers found that in seven out of ten cities there was an increase in the number of space hours used by long-time parkers after meters were installed. And in installing the meters the number of available parking spaces was reduced, due to the creation of stalls of uniform size adequate for the largest vehicles that might use the meters.

The Research Board discovered that in a majority of the cities, motorists were able to remain at the curb for a long time without detection by simply adding coins to the meters. Patrolling police were found to be checking meters to determine when coins were last inserted, rather than inspecting parked cars to determine if they had been standing in the spaces longer than legal.

Lake Water for Rochester

Lake Ontario will be tapped as a major auxiliary water supply for Rochester, N. Y. The city will move swiftly in its program to meet the problem of expanded water consumption, embarking upon the initial phase next month, according to City Manager Louis B. Cartwright.

The first step will be construction of a pumping plant near the Eastman Kodak pumping plant, and laying of new water mains to the city. Estimated cost of the project, expected to be completed by the end of 1950, is $1,800,000.

Also on the agenda, to be undertaken over a period of years, are construction of the city's own intake line from the lake and construction of filter plants there.

ROANOKE'S STAR–This 100-ft. electric star, almost as high as an 8-story building, will tower from the top of Mill Mountain 975 ft. above Roanoke, Va. Built at a cost of $25,000, it is said to be visible 25 miles away (or 100 miles by air). More than 2,000 ft. of neon tubing is being used in its construction. It will be lighted every night through the holiday season. The star is sponsored by the Merchants Association and the Chamber of Commerce, whose aim is to make Roanoke the star city of the South. Builders of the spectacular star are Roy C. Kinsey Sign Co., Roanoke Iron & Bridge Works, and John W. Hancock, Inc.

Municipal Briefs

Air Pollution–The Air Pollution Control Board of Buffalo, N. Y., is planning a strong campaign against violators of the anti-smoke ordinance, and after several months of study; a smoke abatement ordinance has been enacted at Charlotte, N. C., to go into effect Jan. 1.

Special Water Department–The Governmental Research Institute says that the $50,000,000 water system of St. Louis, Mo., should be run by a separate department of the city government and not by the water division of the Department of Public Utilities, and proposes a charter amendment for the purpose.

School Building–Board of Education of Toledo, Ohio, is planning an extensive school building program, following approval by voters of a 2-mill tax to raise about $1,250,000 annually for the next five years.

Industrial Area–The Great Northern Railroad is preparing an area of eight city blocks in Moorhead, Minn. for industrial development. The railroad will plant industrial sites and bring in spur tracks and sewer and water connections, leasing the sites to new industries that will construct permanent buildings there.

Youngstown, Ohio–Greater Youngstown Area Foundation is selecting two firms to start engineering studies of a proposed $6,000,000 downtown parking structure over the present Erie R.R. tracks.

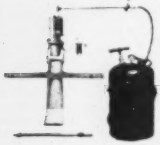
San Diego, Calif.–A 3-month trial of a 36-minute limit parking time in congested areas has been ordered by the city council.

White Plains, N. Y.–The 1,700 parking meters here have averaged receipts of $47.24 each so far this year. The total for the year is expected to reach $100,000. The city (population 45,000) now has 1,137 curb meters and 572 in off-street parking places, an additional order for 181 more has been placed.

Akron, Ohio–The city has authorized the purchase of 35,000 sq. ft. at Bowery and Quaker streets if plans for a 3-deck, 3,600-car garage now on drawing table are approved.

Get Ready for Winter with HAUCK HEATERS

Burn Kerosene or Light Fuel Oil



HAUCK CONCRETE HEATER

Heats aggregates speedily, uniformly in tilt or non-tilt drums while mixing. Simple, easy to run. Burner detachable for thawing and melting jobs.

HAUCK WATER HEATER

For fast heating large quantities of water for concrete mixers or central mixing plants. Conical water heating coil with hot water recirculation system in tank; powerful smokeless heating burner; fuel tank with hand pump and hose.

HAUCK SALAMANDER

Distributes heat over large area; portable, clean, smokeless. Heavy duty heating chamber complete with burner, fittings, hose and hand pump type, welded steel fuel tank.

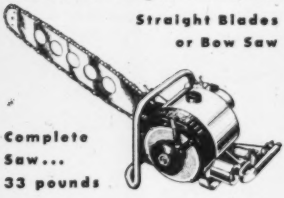
Also get Catalog on Torch Thawing Outfits; Steam Thawers, Ground Thawers, Tar Melting Kettles, Lead and Compound Furnaces, etc.

HAUCK MANUFACTURING CO.
150-160 Tenth St., Brooklyn 15, N. Y.

HOMELITE *One Man* CHAIN SAWS

Gasoline-Engine-Driven

Straight Blades or Bow Saw



Complete Saw... 33 pounds

Easiest Handling
Fastest Cutting
Lightest Weight
Lowest Maintenance

HOMELITE CORPORATION
1112 RIVERDALE AVENUE
PORTCHESTER, N. Y.

Please send complete data on Homelite Gasoline Chain Saws.

Name .....

Address .....

MEN AND JOBS

William T. Cavanaugh has been appointed Skamania County engineer at Stevenson, Wash., to replace **Clarke A. LaBarre,** retired. He was a construction engineer for the FWA for eight years until he became a consulting engineer recently.

Roger S. Warner, formerly director of engineering for the Atomic Energy Commission, has joined Arthur D. Little, Inc., Cambridge, Mass., research and engineering.

William A. McWilliams of Dover, Del., chief engineer of the Delaware State Highway Department, will be transferred to be associate director of the Delaware Memorial Bridge Division Jan. 1. The department will appoint Mr. McWilliams to succeed **W. W. Mack,** director of the bridge division, when the latter retires at 70. McWilliams has been with the department since 1920, except for a period of private employment. He has served at various times as Kent County engineer, and as assistant chief engineer in charge of construction and maintenance.

William F. Ryan of Salina, Kan., has resigned as chief engineer of the Salina Supply Co., and with his brother **James D. Ryan** has formed the Ryan Engineering Co. in Salina to be consulting engineers, in the design of mechanical equipment for buildings.

Grant M. Hinkamp is now with Lawrence Peterson and Associates, consulting engineers, Milwaukee, Wis. He formerly was with Allis-Chalmers Mfg. Co. and during the war was with Stone and Webster Engineering Corp., as a superintendent of construction on three ordnance plants, and at Oak Ridge, Tenn.

C. W. Eubank is consulting engineer of Douglas County, Omaha, Neb.

Glenn I. Anderson, Jr., is Knox County highway commissioner and engineer at Bloomfield, Neb.

E. E. Taylor, former colonel with the corps of Engineers, is now with Ralph D. Thomas & Associates, Inc., consulting engineers, of Minneapolis, Minn., heading the structural engineering section. He is a 1922 M.I.T. graduate.

Jim Pearce has joined the Westland Construction Co. at Pasco, Wash., as managing engineer in charge of general construction. A graduate of the Colorado School of Mines, he worked for mining concerns in British Columbia and Idaho before becoming engineer in charge of water works construction at the Hanford Works in 1945. He has been in general contracting work for the last three years, first as district manager at Pasco for the James Construction Co. of St. Paul and Seattle, and later as partner in the firm of Miller-Pearce.

Paul O. Harding has been appointed assistant California State Highway Engineer, succeeding Spencer V. Cortelyou who resigned from the District 7 post—comprising Los Angeles, Ventura, and Orange counties—after 38 years with the highway department. Harding, who joined the department

At the left is W. O. Jones, city manager of Fort Worth, Tex., the president of the American Public Works Association. He is talking with the former president, Wm. A. Xanten, superintendent of the division of sanitation, Engineering Division, Washington, D. C.

On board the "Surveyor," aptly named Army Engineer boat, Sam Bailey, chief of the engineering section, Louisville district, and John Wiseman, sanitary engineer of the Ohio River division, U. S. Corps of Engineers compares notes on replacement of dam and lock structures.

in 1947 as a district engineer, began his engineering career in 1912, received his civil engineering degree from the University of Nebraska, and worked previously for the Oregon State Highway Department. From 1932-37 he was an assistant district engineer in San Francisco in charge of the approach system to the San Francisco-Oakland Bay Bridge.

G. A. James and Associates, consulting engineers, have removed their office to 307 First National Bank Building, Coral Gables, Fla.

James Robertson has been promoted from superintendent of maintenance to principal assistant city engineer at Seattle, Wash., to succeed **C. G. Will,** retired. A 1924 civil engineering graduate of the University of Washington, Robertson has been with the city engineering department ever since, advancing through the drafting, designing, bridge, sewer and field engineering divisions to superintendent of the street and bridge maintenance division seven years ago. **W. R. Johnson,** who has been Robertson's assistant, is the new maintenance engineer.

Wm. G. Edens was honored recently at the beginning of the Edens superhighway running northwest from Chicago to the Lake County, Ill., line. Mr. Edens is called "the Father of Illinois Highways," and served as the president of the old Illinois Highway Improvement Association.

The Geological Survey has announced these personnel transfers: **Alexander A. Fischback, Jr.,** is now district engineer for the surface water branch, Water Resources division at Charleston, W. Va., succeeding **J. I. Perrey; Lawrence C. Crawford** is district engineer at Columbus, Ohio, succeeding **C. V. Youngquist** now with the newly-formed Natural Resources division for Ohio; **Vernal R. Bennion** is district engineer at Iowa City, Iowa, succeeding Mr. Crawford; and **Floyd F. LeFever** is district engineer at College Park, Md.

Norman John Stiene, Los Angeles, has been appointed city engineer of Pomona, Calif.

H. A. Price, formerly principal engineer for Pacific Island Engineers in Guam and senior engineer for Bechtel Corp., has joined the staff of Tucker Co., Emeryville, Calif., manufacturers and distributors of pneumatic and hydraulic equipment for industrial plants. He will serve in Oakland-Sacramento.

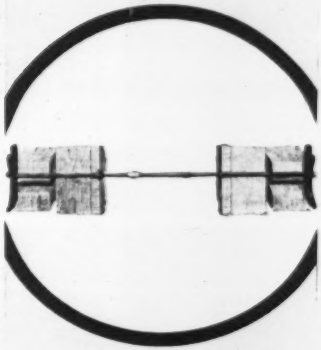
Proving that engineers play, too, here is a threesome snapped at the golf tournament at the California Section, AWWA, meeting. They are W. E. Renshaw, left, water engineer for Inglewood, Calif.; C. A. Lauenstein, construction engineer, San Francisco water department; and J. W. Trahern, supervising civil engineer, East Bay Municipal Utility District. (Armco photo)

S. D. Steinhagen is superintendent and A. R. Turpin is his assistant, for Doyle and Russell, and Wise Contracting Co. on an extension to the Telephone Building in Richmond, Va. The building is an 8-story, steel frame, all-welded structure.

Col. Wendell P. Trower has been transferred from duty as district engineer Corps of Engineers, Chicago, to be chief of the procurement office in the same place. During the war Colonel Trower, a 1918 West Point graduate, served in the south and southwest Pacific and in Japan.

The folks who made the first SNAP-TY* are still first -the name is RICHMOND

*Reg. U.S. Pat. Off. No. 317,560



MANUFACTURERS of ENGINEERED TYING DEVICES, ANCHORAGES and ACCESSORIES for CONCRETE CONSTRUCTION

SEND FOR FREE CATALOG

RICHMOND SCREW ANCHOR CO., INC.
820 Liberty Avenue, Brooklyn 8, N. Y.

NAME_____

ADDRESS_____

CITY_____ STATE_____

FREE booklet helps employers encourage honesty of employees

In a booklet entitled "Are You Your Brother's Keeper?", Lawrence W. Miles, C.P.A., points out:

Many employers have come to realize that in addition to affording proper working conditions, reasonable hours, adequate wages and opportunities for advancement, they also have a definite moral obligation to do everything within reason to prevent their employees from succumbing to the temptation of dishonesty.

Mr. Miles then examines the whole problem of employee dishonesty and shows how employers may help prevent it. These subject headings give some idea of the scope of the work:

Checking References	**Control of Merchandise**
Safeguarding Receipts	**Inventory and Stocktaking**
Controlling Disbursements	**Payroll Precautions**
Check Cashing	**Independent Audits**
Test Checks and Receipts	**Fidelity Bond Protection**

In covering these and other subjects, Mr. Miles gives authoritative and practical suggestions to help employers safeguard the inherent honesty of their employees. For, as Mr. Miles says in his closing paragraph:

In the belief that many employers are deeply conscious of their responsibilities to their employees, the suggestions here advanced are offered with the hope that some may be aided in better meeting these responsibilities and in answering the question "Am I my brother's keeper?"—"I am!"

This valuable booklet is published by the Hartford as a service to American business. A copy will be sent without obligation to any employer requesting it.

HARTFORD

HARTFORD FIRE INSURANCE COMPANY
HARTFORD ACCIDENT AND INDEMNITY COMPANY
HARTFORD LIVE STOCK INSURANCE COMPANY
Hartford 15, Connecticut

Year in and year out you'll do well with the Hartford

HARTFORD ACCIDENT and INDEMNITY COMPANY
Hartford 15, Conn.

Please send free copy of "Are You Your Brother's Keeper?"

NAME _____

FIRM NAME _____

ADDRESS _____

CITY _____ STATE _____

OBITUARY

William J. Klein, 75, authority on water purification and sewage disposal systems, died Nov. 30 in Orange, N. J. He had been retained as consultant engineer by many American municipalities and by European and Asiatic cities in the research, design, construction, and operation of water works. A civil engineer graduate of the University of Pennsylvania, during the first world war Mr. Klein was engineer for water and sewer works at Hog Island, Calif., shipyards, and he helped develop water treatment plants for the AEF. During the recent war, he served as consultant engineer for a number of air bases and other Army and Navy constructions.

Charles Silliman, 81, retired civil engineer, died recently at Norristown, Pa. Prior to his retirement in 1934, he was consulting engineer for the Committee of Railroad Presidents in the revaluation of railroads east of the Mississippi River. He previously had a long career with the Pennsylvania Railroad and the Norfolk and Western Railroad. He attended the University of Pennsylvania.

Hobart Cutler Dickinson, 74, engineer and authority on highway safety and for many years chairman of the highway research board of the National Research Council, died Nov. 27 in Washington, D. C. He was an inventor, physicist, and former chief of the division of heat and power of the Bureau of Standards. He was graduated from Williams College where he was later assistant professor, and he received his Ph.D from Clark University. In 1903 he joined the bureau as an assistant physicist. In 1921 he became a division chief.

Carl A. Hechner, Sr., 54, maintenance engineer for the Washington Suburban Sanitary Commission, died Nov. 24 in Washington, D. C. A native of Baltimore, Mr. Hechmer had been engaged in sanitary engineering for 35 years, primarily in the maintenance and operation of water and sewage systems. A graduate of Baltimore Polytechnic Institute, he was employed by the Baltimore Public Water Department and the Maryland Health Department before joining the sanitary commission in 1918. He was a director of the Chesapeake Section of the American Water Works Association and in 1940 he was selected by that organization for the George W. Fuller Award for outstanding service.

Four steps to restore worn surfaces...FAST!

Asphalt resurfacing affords a rapid and economical means of providing any worn or broken pavement with a smooth-riding, easily maintained surface. For city streets or four-lane highways, the four steps outlined here describe one method of asphalt application that produces sound, long-wearing roads.

A Standard Oil Asphalt Representative can suggest other economical types of asphalt construction to meet your needs and local conditions. You are assured prompt delivery of Standard Oil Asphalt from any of the five large refineries located throughout the Midwest. Write Standard Oil Company (Indiana), 910 South Michigan Ave., Chicago 80, Ill.

STANDARD OIL ASPHALT

1 Spot Patching—Where the old highway is badly broken, holes are patched by filling with an asphalt-aggregate mix delivered hot from a central mixing plant.

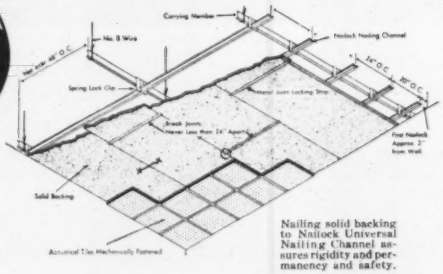
2 Prime Coat—This is a thin coat of cut-back asphalt spread over both the old road surface and the patches that have been brushed clean. It helps to bind the asphalt to the old surface.

3 Binder Course—An asphalt-aggregate mix is delivered hot from the central mixing plant to an asphalt-finishing machine, and is laid from 2 to 3 inches deep over the old road surface and patches.

4 Wearing Course—This is the top course composed of asphalt, stone, and sand. It is mixed hot at the central mixing plant and laid by machine. This top course presents a smooth, waterproof, long-wearing surface which requires no seal coat or stone application.

STANDARD OIL COMPANY (INDIANA) STANDARD

SAFEST AND SIMPLEST METHOD
The Nailock Method is the simplest and safest method of installing a suspended ceiling construction with or without acoustical tiles.



Nailing solid backing to Nailock Universal Nailing Channel assures rigidity and permanency and safety.

Use *Nailock*

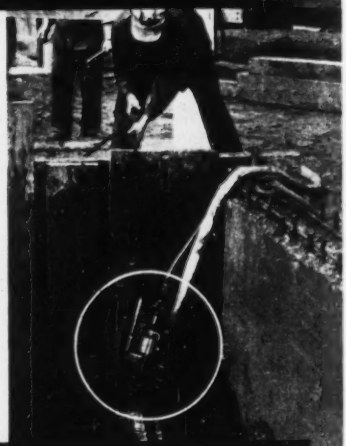
FOR SUSPENDED CEILING CONSTRUCTION

Permits Use of Any Acoustical Materials Required

Reduce time-wasting grief and time cost on suspended ceiling jobs. Nailock Universal Nailing Channels provide a means for securely fastening backing or backerboard and acoustical tiles in place, and assure a rigid, safe and permanent suspended ceiling installation.

NAILOCK STEEL DIVISION
THE SANYMETAL PRODUCTS CO., INC.
1704 Urbana Road • Cleveland 12, Ohio

PUMPING PROBLEMS? HERE'S THE ANSWER!



CLECO

No. 183-A AIR-OPERATED

PORTABLE SUMP PUMP

Capacity, 340 gpm at 10 ft. head, 124 gpm at 70 ft. head • Weight only 56 lbs. • Requires no priming • Available in steel or bronze construction • First choice of production-minded contractors

Write for Bulletin SP-849

CLECO DIVISION
of the REED ROLLER BIT COMPANY
P. O. BOX 2119 HOUSTON 1, TEXAS

Elections and Activities

M. Frank Wooten, Jr., Charlotte, N. C., engineer, was named chairman of a committee set up at a recent meeting at Chapel Hill, N. C., to organize 465 registered engineers of North Carolina into a group tentatively to be known as the Professional Engineers of North Carolina. The group will be affiliated with the National Society of Professional Engineers and an organizational meeting is to be held soon after January 1, either in Raleigh or Greensboro.

Edward J. McDonough, president of the Standard Foundry Co., Hartford, Conn., has been elected chairman of the Connecticut State Water Commission. He has been a member of the commission since 1941, and succeeds Sanford H. Wadhams.

Fifty professional engineers from Jefferson and St. Lawrence counties met in Watertown, N. Y., recently to consider organization of country chapters of the New York State Society of Professional Engineers. Webbert Roubie of Watertown was elected chairman of an organizing committee for Jefferson County and Ross Germano of Ogdensburg was elected organizing chairman for St. Lawrence County.

MAJOR MEETINGS

Canadian Construction Association, Mount Royal Hotel, Montreal, Que., Jan. 15-18.

American Water Works Association, N. Y. Section midwinter luncheon, Hotel Statler, New York, N. Y., Jan. 17.

Associated Equipment Distributors, Stevens Hotel, Chicago, Ill., Jan. 15-19.

National Sand & Gravel Association, convention and exhibit, Stevens Hotel, Chicago, Ill., Jan. 22-27.

National Ready Mixed Concrete Association, convention and exhibit, Stevens Hotel, Chicago, Ill., Jan. 22-27.

National Crushed Stone Association, convention and exhibit, Stevens Hotel, Chicago, Ill., Jan. 29-Feb. 2.

National Association of Home Builders, Congress and Stevens Hotels, Chicago, Ill., Feb. 19-23.

Minnesota Federation of Engineering Societies, exposition, Minneapolis Armory, Minneapolis, Minn., Feb. 21-23.

Ontario Road Builders' Association, Royal York Hotel, Toronto, Ont., Feb. 22.

Associated General Contractors of America, national convention, San Francisco, Calif., Feb. 27-March 3.

American Road Builders Association, annual meeting, Cincinnati, Ohio, March 6-9.

EDUCATION and RESEARCH

PUERTO RICAN ENGINEERS BUILDING—The new headquarters of the Colegio de Ingenieros de Puerto Rico is in this 2-story concrete structure which stands on a lot of about 28,000 sq. ft. It contains 15,800 sq. ft. of floor space for offices, convention hall, recreation rooms, storage, lobby, etc. The cost of the building and equipment was $250,000. The architects were Schimmelpfennig, Ruiz & Gonzalez. Puerto Rican engineers must be registered with the Colegio, and therefore the institute has a 100 percent membership. The directors are: Orlando R. Mendez, president; Cesar Cordero Davila, vice-president; Alfonso E. Arana, executive secretary; Simon Carlo, Jr., secretary; Angel (2) Silva, treasurer; Juan Diaz Santini, auditor; and Justo E. Varela, Simon Amador, Juan O. Sauri, Jose Rodas, Rafael Orrach and Charles Lang.

Smog Research

One group of Los Angeles' smog researchers, Stanford Research Institute, has announced its job 80 percent complete with the isolation of 40 contaminants regularly found in smog.

The report identified no industrial sources of contaminants; researchers expect that another year's work will give definite indications of which industries contribute to smog, and how much.

In its second interim report since beginning research in 1947, under sponsorship of the Western Oil and Gas Association, the institute said it now knows the contaminants in Los Angeles' smog; the meterological factors of smog, and what causes the reduction of visibility. However, it still must trace more completely the causes of eye irritation and the sources of contaminants.

The local smog, the researchers found, is dependent on the Pacific inversion layer over the city, convection currents, and surface breezes. Using only these conditions, researchers have set up a smog index which has been about 90 percent accurate in predicting smog two to three days in advance. The inversion layer, sometimes as high as 10,000 ft. above the city and at other times hovering 500 ft. above it like a lid, is the main condition necessary for smog formation.

Five types of particulate matter have been found which contribute to cutting visibility, principally carbon and metal particles and large soluble crystals such as sulfates, nitrates and chlorides.

Nine substances have been isolated which in chemical combination could cause eye irritation; formaldehyde, ammonia, sulfur dioxide, sulfur trioxide, nitrogen oxides, acrolein, ozone, carbon particles and oil.

Thus far, Los Angeles' oil industry has spent more than $10,365,000 on various smog control devices, but these have not eliminated nor decreased the smog's effects.

The Los Angeles Air Pollution Control Hearing Board recently gave 32 gray iron foundries until Jan. 27 to control their smog emission.

Jobs—Job opportunities for engineering graduates are now returning to normal and the graduates can't be so "choosey" from now on, some 500 members of the senior engineering class of the University of Wisconsin were told by representatives of four basic American industries at a special job forum recently held at the university. However, more than 81 percent of the members of the last senior class of engineers at Wisconsin have already obtained employment.

New College Wanted—Charles H. Stone has been named general chairman of a committee appointed by the Charlotte Engineers Club to lead organized efforts toward obtaining a four-year college of engineering at Charlotte, N. C. Hoyt Gavin is secretary of the group. Herman B. Wolfe has been appointed chairman of the subcommittee which will investigate chances of getting a technical institute and a larger technical high school at Charlotte.

FlameZel TARPAULINS

PREVENT COSTLY FIRES

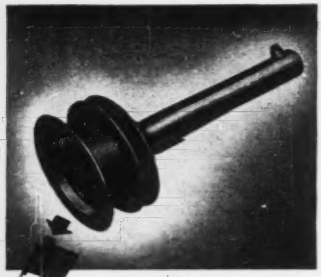
Immediate Delivery from These Distributors

NEW ENGLAND
Hedge & Matthels Co.
Parker-Danner Co.
NEW YORK
Drennan Steel Products Corp., Syracuse
Keystone Bdrs Supply Co. Inc., Rochester
Mahoney-Clarke, Inc., New York City
Stillwell Supply Corp., Long Island City
Trevor Corp., Buffalo
R. B. Wing & Son Corp., Albany
NEW JERSEY
Dale & Rankin, Inc., Newark
WASHINGTON, D. C.
Hudson Supply & Equipment Co.
MARYLAND
General Supply & Equip. Co. Inc.
Baltimore
NORTH CAROLINA
Contractors Service, Inc., Charlotte
VIRGINIA
Rish Equipment Co., Richmond
Rish Equipment Co., Roanoke
WEST VIRGINIA
Rish Equipment Co., Charleston
Rish Equipment Co., Clarksburg
PENNSYLVANIA
Austin Supply Co., Inc., Philadelphia
Oravo-Doyle Co., Pittsburgh
OHIO
Flack Equipment Co., Dayton
Rish Equipment Co., Cincinnati
The W. T. Walsh Equip. Co., Cleveland
MICHIGAN
Contractors Machinery Co., Grand Rapids
R. G. Moeller, Detroit
WISCONSIN
Prime-Best, Inc., Madison
Prime-Best, Inc., Milwaukee
MINNESOTA
Minneapolis Equipment Co., Minneapolis
SOUTH DAKOTA
Pecaut Industrial Supply Co., Sioux Falls
NEBRASKA
Anderson Equipment Co., Omaha
IOWA
Harry Alter & Sons, Davenport
Pecaut Industrial Supply Co., Sioux City
ILLINOIS
Clark & Barlow Hardware Co., Chicago
Becker Equipment & Supply Co., Chicago
INDIANA
Reid-Holcomb Co., Indianapolis
Standard Equipment & Supply Corp., Hammond
Wolf Tent & Awning Co., Fort Wayne
KENTUCKY
Henry A. Petter Supply Co., Paducah
MISSOURI
Allied Construction Equip. Co., St. Louis
Brown-Strauss Corp., Kansas City
LeRoy Tent & Awning Co., St. Louis
Machinery & Supplies Co. Inc., Kans. City
The Victor L. Phillips Co., Kansas City
TENNESSEE
Road Builders Equipment Co., Memphis
MISSISSIPPI
Contractors Material Co., Inc., Jackson
LOUISIANA
Builders Supply Co., Shreveport
Pelican Well Tool & Supply Co., Shreveport
TEXAS
J. E. Ingram Equipment Co., San Antonio
The Lofland Co., Dallas
OKLAHOMA
Mideke Supply Co., Oklahoma City
Leland Equipment Co., Tulsa
Tulsa Equipment Co., Inc., Tulsa
The Victor L. Phillips Co., Oklahoma City
COLORADO
Western Machinery Co., Denver
CALIFORNIA
Industrial Equipment Co. of Southern California, Los Angeles
Standard Machinery Co., San Francisco
MONTANA
Montana Powder & Equipment Co., Helena
Western Builders Supply, Billings
WASHINGTON
Construction Equipment Co., Spokane

COST VERY LITTLE MORE THAN ORDINARY TARPS

FlameZel
Flameproofed by WenZel
TARPAULINS

Manufactured by
H. WENZEL TENT & DUCK CO.
ST. LOUIS 4, MO.



RUD-O-MATIC
MAGNET REEL-TAGLINE COMBINATION

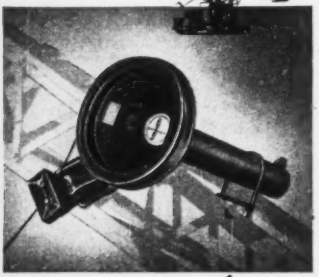
Rud-o-Matic Combination Magnet Reel-Tagline saves costly electric cable on overhead and boom crane magnet pick-up jobs. Steel tagline cable takes the load. Protective slack is maintained on electric cable. Models to fit your need.

Boom Crane or Overhead Crane, Clam Shell Bucket or Magnet Pick-Up

RUD-O-MATIC TAGLINE CONTROL is your answer!

RUD-O-MATIC TAGLINE

holds the bucket steady at any angle of the boom. Heavy duty torsion coil spring assures constant tension at all times, at any length of cable run-out. Easily installed. Interchangeable for use on equipment of similar size. 8 models for various bucket sizes.



McCAFFREY-RUDDOCK Tagline CORP.
EAST 25th STREET • LOS ANGELES, CALIFORNIA

UNIT PRICES BID BY CONTRACTORS

Concrete paving and storm sewers, LeMars, Ia.

Bids 8 percent under the engineer's estimate on street improvements at LeMars, Ia., include 6-in. concrete pavement, integral curbs and 12- to 42-in. storm sewers. Buell & Winter, Sioux City, Ia. are consulting engineers for the city on this work.

Pavement is not reinforced, and slabs are joined by dowels. The dowel joints and excavation to the depth of the slab are included in the price per square yard for concrete. Specifications provided for either vitrified clay sewer pipe or concrete pipe. Class 1500D T & G concrete culvert pipe is being used on sizes 15" and greater, with vitrified sewer pipe for 12" sewers. Work started Oct. 1, 1949 and is to be completed by July 1, 1950. Rail transportation is available at the site. Contractors furnish all materials. Prevailing wage rates are $1.50 to $1.95 for skilled workers, $1.10 to $1.45 for semi-skilled, and $0.85 to $1.05 for unskilled.

All three bidders are from Sioux City, Ia. The high is 18½ percent above the low bid.

1	Booth & Olsen (contr.)	$305,802
2	Jensen & Krage	359,548
3	Western Contr. Corp.	362,293

Items	Quantity	Unit Prices 1	2
Concr. pave., 6"...sy	80,750	$ 2.95	$ 3.26
Integral curb, 6"..lf	44,800	0.40	0.65
Conc. header, with dowels ....lf	1,870	0.75	1.00
Concr. pave., 6"...sy	700	2.95	3.26
Integral curb, 6"..lf	160	0.40	0.65
Pave. remov. ....sy	900	1.00	1.25
Excess ea. excav..cy	6,500	0.90	1.50
Storm sewer, 12"..lf	410	2.90	3.50
15" .....lf	1,010	3.60	4.30
18" .....lf	940	3.85	5.00
24" .....lf	850	4.90	6.30
30" .....lf	440	6.00	8.50
36" .....lf	740	7.50	12.00
42" .....lf	270	10.50	15.00
Inlets			
Type "A" .....ea	21	120.00	130.00
Type "B" .....ea	16	140.00	160.00
Type C, 2-brack..ea	2	235.00	280.00
Type C, 4-brack..ea	2	325.00	400.00
Std. mh, 300-lb. cov..ea	2	150.00	160.00
Std. mh, 145-lb. cov..ea	5	100.00	140.00
Inlet mh .....ea	1	100.00	130.00
Concr. pipe lines twin 42"—425 lf..ls	1	9,000	11,800
Concr. sidewalk, 4" sf	100	0.50	0.50
Expan. mat., ½x4"..lf	100	0.10	0.10
Ovhl, cy per M ft..ea	50	0.25	0.30

Lump sum bids adjusted by plus or minus unit prices

Water line and sewer bids, opened September 19, 1948 by Baltimore County Metropolitan District, use a novel form of bidding.

As shown in the accompanying table, for selected items, this takes the form of lump sum bids for the quantity indicated of each major element of the job. There is in addition an agreed-upon unit price per foot, increase or decrease, to be paid for variations from the quantities in the engineer's estimate.

Wm. F. Neale is chief engineer for Board of County Commissioners, Towson, Md.

Bids called on 31 items attracted 13 bidders to the entire letting, but not all bidders bid on all items. The selected items which follow illustrate the unique form of bidding and the prices it produced.

Water lines and appurtenances

Item 4 Patapsco Ave., Edgewater-Potomac Ave., Dist. 15 Chesaco Park. 8 bids. Low 2% below next higher, 29 percent below high. A&M Constr. Co., contractor.

Item	Quantity	Low bid & contr ls	± up	2nd low bid ls	± up	High bid ls	± up
12" cip	2,240	$12,817	$5.72	$13,836	$6.55	$18,020	$8.00
8" cip	540	1,839	3.40	1,982	3.50	3,305	6.00
6" cip	80	190	2.37	480	3.00	478	5.97
48" RCCPX or CMP (J)	90	5,490	61.00	4,500	45.00	6,970	77.00

Item 7 Seminary Ave., Dist. 8 Lutherville, 3 bids. Low bid 21 and 24% below other two. Morocco Constr. Co., contractor.

12" cip	760	$8,163	$6.90	$11,429	$9.00	$9,214	$12.20
8" cip	20	100	4.00	126	5.00	120	6.00
6" cip	5	200	3.00	28	5.00	26	5.30
48" RCCPX or (MP-8 gauge) (J)	50	2,500	45.00	2,250	35.00	5,000	100.00

Sewer and appurtenances

Item 1 Back River Neck Road, Hopewell Ave., Dist. 15 Midriver Park. 8 bids. Low bid 13% under 2nd low, 38% under high. Tibbets Constr. Co., contractor.

15" VCP	445	$6,012	$13.50	$10,629	$23.89	$17,600	$18.00
15" VCPX	415	4,500	10.60	5,135	12.37	6,420	15.00
8" VCPX	1,320	7,800	5.40	5,462	4.14	6,571	4.00
6" VC, hc	620	1,900	2.90	1,939	3.13	1,880	3.00

Item 3 Bayard Ave. Dist. 12 Kimberly Farms 9 bids. Low 2.5% below 2nd low, 45% below high. John Matricciani Co., Inc., contractor.

8" VCP	1,000	$3,765	$3.75	$3,858	$3.20	$7,000	$7.00
6" VCP, hc	300	600	2.00	630	2.10	900	3.00

Item 19 Rosedale & Gilmore Ave. Dist. 15 Rosedale, 10 bids. Low is 2.5% below 2nd low, 41.5% below high. Baltimore Sewerage Co. is contractor.

8" VCPX	920	$3,600	$5.25	$3,780	$4.11	$6,764	$7.00
6" VCP, hc	215	800	3.30	742	3.45	774	3.00

J—jacking. hc—house connections. ls—lump sum. up—unit price.

DREDGES

HYDRAULIC
● DIPPER ●
CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters
If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

McKIERNAN-TERRY
RUGGEDLY-BUILT
PILE EXTRACTORS

Provide exceptional pulling power, with the sharp energy of blow needed to vibrate and loosen stubbornly set piling. These double-acting extractors come in two standard models—heavy and extra heavy. Standardized line also contains 10 double-acting hammers and 5 single-acting hammers. Write for free Bulletin.
Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.

McKIERNAN-TERRY CORPORATION
Manufacturing Engineers
13 Park Row New York 7, N. Y.

SAFE, FAST JACKING FOR ALL CONSTRUCTION JOBS

Simplex
LEVER · SCREW · HYDRAULIC
Jacks

TEMPLETON, KENLY & CO.
1002 S. Central Ave., Chicago 44, Ill.

"GUNITE" CONCRETE
(Since 1918)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices
R. N. Turner, Dist. Mgr., 228 No. LaSalle St., Chicago 1, Ill.; B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.; Philip D. Barnard, Dist. Mgr., 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans
See our catalog in Sweet's

Contract Core Drilling

Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures.

Core Drill Contractors for more than 60 years

JOY MANUFACTURING CO.
Contract Core Drill Division • MICHIGAN CITY INDIANA

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

WATER SUPPLY

LOW BIDDERS

Mass., Boston — Commonwealth of Mass., Metropolitan Dist. Comn., 20 Somerset St., Nov. 22. Contr. 184, 20 in. pipeline to Bellevue Reservoir, from Continental Constr. Co., 6 Pleasant St., Malden, **$169,781.** CD 10/26.

N. Y., Poughkeepsie — Bureau Contracts & Accounts, Albany, Nov. 30, water supply storage tanks at Hudson River State Hospital, from Vanguard Constr. Corp., 369 Lexington Ave., New York, Zone 17, **$85,170.** CD 11/23.

CONTRACTS AWARDED

●**Calif., Pasadena**—City, 50 m. g. Hastings Reservoir, to C. C. Nickel, 120 S. Sierra Madre Blvd., Arcadia, **$1,049,729.** Bids 11/9, awarded 12/1. CD 11/15, under LB.

SEWERS, WASTE DISPOSAL

BIDS ASKED

January 9

Okla., Sayre—Ernestine West, city, clk., Sayre, sanitary sewer mains, sub-mains, sewage disposal plant. $300,000. Plans deposit $50. Benham Eng. Co., American Natl. Bldg., Oklahoma City, Zone 2, engr. CD 5/16

LOW BIDDERS

N. Y., Brooklyn—President Brooklyn Boro. Boro Hall, Zone 2, Nov. 28, combined sewers, Farragut Rd., Foster and Stanley Aves., E. 98 and E. 99 Sts. from Newman & Nazzaro, 215 Montague St., Zone 2, **$382,670.** Cancelled bids to have been opened Nov. 28, reconstructing sewers, Union Ave., Richardson and N. 11 Sts. CD 11/17.

R. I., Providence—State of Rhode Island and Providence Plant, Blackstone Valley Sewer Dist. Comn., 238 State Office Bldg., Nov. 29. Contr. 13, 34x63 ft. Omega Pumping Station and track bldg., equip., appurtenances, East Providence, from R. Zoppo Co., 842 Boston-Providence Hy., Route 1, Norwood, Mass., **$228,600.** CD 11/2.

BRIDGES

BIDS ASKED

December 27

La., New Orleans—City Purch. Div., 302 City Hall, Proposal 12,429, 1,751 ft. concrete, steel N. Claiborne Ave. overpass, over Press St. rail yards. $670,000. Plans deposit $30. T. Edw. Erust, Bd. Trade Bldg., engr. CD 11/25.

LOW BIDDERS

†Kan., Kansas City—U. S. Eng., 601 Davidson Bldg., Kansas City, S. Mo., Nov. 29, furnishing, installing lifting mechanism for Chicago, Rock Island & Pacific RR. Bridge over Kansas River, Serial N. CIVENG 23-028-50-53, from L. G. Barcus & Sons, 1430 State Ave., Kansas City, Kan., **$309,332.** Est. $337,182. CD 11/16.

CONTRACTS AWARDED

†Washington—Bureau Pub. Roads, Dpt. Commerce, Morgan Bldg., Portland, Ore., 75 ft., and 70 ft. rein.-con. bridges and 2 viaducts 400 ft. long on Stevens Canyon Hy., Mt. Ranier National Park, Lewis Co., to Hawkins & Armstrong, 5265.16 St. N. W., Seattle, **$313,726.** Bids 11/29. CD 11/16

STREETS AND ROADS

LOW BIDDERS

Maryland — State Rds. Comn., Baltimore, Nov. 29, wid'n., drainage, resurf. portions roadway and grading, drainage, surf. relocation 2,652 mi. along State Rte. 24, beginning approx. 2.5 mi. south of Bel Air and extend. southeasterly toward State Rte. 7, to Van Bibber, Hartford Co., Contr. H-322-415, from Harry T. Campbell & Sons Corp., Towson, stone **$292,183,** slag **$293,848.** CD 11/16.

Texas—State Hy. Comn., Austin, cancelled bids to have been opened Dec. 14, flexible base, seal coat 13.419 mi. Hy. FM 450, S. 1196 (1), Harrison Co., **$113,000,** flexible base and double asph. surf. tr. 11.973 mi. Hy. FM 894, Proj. S. 1410 (1), **$118,000.** CD 11/25.

Tex., Pasadena—City, City Hall, Nov. 22, rein.-con. paving Main and Harris Sts., from Holland Pass Co., Baytown, **$306,359.** George A. Smith, city engr.

CONTRACTS AWARDED

Utah—State Road Comn., State Capitol, Salt Lake City, 2½ in. road mixed bit. 6.607 mi. between Hailstone and Francis, FASP S-240 (1), Wasatch Co., to A. O. Thorne & Sons Constr. Co., Springville, **$263,966.** Est. $286,417. Bids 11/22. CD 11/9.

†Washington—Bureau Pub. Rds., Dpt. Commerce, Morgan Bldg., Portland, Ore., grading 0.8 mi. and construct 162 ft. tunnel on Stevens Canyon Hy. at Mt. Rainier National Park, Lewis Co., to J. N. and M. J. Conley, 4332 N. E. Royal Court, Portland, Ore., **$155,818.** Bids 11/29. CD 11/16.

EARTHWORK, WATERWAYS

BIDS ASKED

†Iowa—U. S. Eng., Clock Tower Bldg., Rock Island, levee imprv., Iowa River Flint Creek Levee Dist. 16, Louisa Co., incl. clearing, disposal hydraulic placement of embankment fill for levee strengthening and capping, constr. 2 set-back levees, incl. 53,600 cu. yd. embankment fill, 19,800 cu. yd. fill (Set-Back Levee 1), 27,500 cu. yd. embankment fill and clearing, grubbing (Set-Back hence 2), CIVENG 11/117-50/18.

†Pa., Phila.—U. S. Eng., 121 N. Broad St., Zone 1, maintenance dredging Delaware River adjoining piers at U. E. Eng. Reservation at Fort Mifflin, approx. 9 mi. downstream from Philadelphia-Camden Bridge. CD 2/4/44.

December 21

†Md., Baltimore—Officer in Charge of Constr., Pub. Wks Office, Fifth Naval Dist., Norfolk 11, Va., dredging berthing area "A" adjacent to easterly side of Pier 194 to 17 Ft. depth, approach to area "B" adjoining outboard end of berthing area C19 ft. depth, and disposal all dredged materials; removal and replacement 240 F.B.M. of 8x10 creosoted stringers and approx. 6,870 F.B.M. of 3x6 decking at several locations on pier. NOY-19674 Spec. 23136. Plans deposit $10.

On or About January 20

†Ohio—U. S. Eng., Madison Ave and S St. W. Huntington W. Va., construct Nashport Dike for Dillon Reservoir Proj., Licking River, 1 mi. north of Nashport Muskingum Co. Serial No. CIVENG-46-022-50-42.

LOW BIDDERS

●**†Arizona**—Bureau Reclamation, Dpt. Interior, Yuma, Nov 22, constr. Wellton-Mohawk Pumping Plants 1, 2 and 3 Gila Proj., Spec. 2804 from United Concrete Pipe Corp., Baldwin Park, Calif. **$1,577,907.** CD 11/2.

†Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, Nov. 23, dam in vicinity of Colorado River Flood Discharge Channel, Matagorda Co., Inv. No. CIVENG-41-243-50-90, from Hendry Corp., Rattlesnake, Fla., **$290,542.** est **$250,000;** dredging main channel from Freeport Harbor to Colorado River and tributary channel to Palacios, Brazoria and Matagorda Counties, Inv. No. ●†CIVENG-41-243-50-91, from Bauer-Smith Dredging Co. Inc., Port Lavaca, **$71,826** est $100,000. CD 11/14.

CONTRACTS AWARDED

†Colorado—U. S. Eng., 200 Railway Exchange Bldg., Denver, levees, water storage recording station and riprap embankment in outlet works on escape channel at Cherry Creek Dam, to C. H. Odell Constr. Co., 2555 Harlan Blvd., Denver **$75,098.** Bids 11/22. Awarded 11/24. CD 11/10.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $25,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
●	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

†New York and New Jersey—U. S. Eng., 80 Lafayette St., New York 1, N. Y., dredging all material except ledge rock from New York and New Jersey Channels, Sect. 3, Areas 1-4, CIVENG-30-075-50-5, to Arundel Corp., Pier 2, Pratt St., Baltimore, Md., **$300,000.** The amount of material to be dredged has been reduced in order to bring the successful bid within the limits of funds available. CD 11/17, under LB.

●**†Washington**—Bureau Reclamation, Dpt. Interior, Coulee Dam, river channel imprvs., Grand Coulee Dam, Columbia Basin Proj., Spec. 2208, to Morrison-Knudsen Co. Inc., Hoge Bldg., Seattle, **$1,691,666.** Est. $2,116,650. Bids 11/8, awarded 11/22. CD 11/16, under LB.

PUBLIC BUILDINGS

BIDS ASKED

December 20

N. Y., Brooklyn—HOUSING TOPSOIL, etc. —New York City Housing Auth., 63 Park Row, New York, Zone 7, construct topsoil and planting for Boulevard Houses (Proj. No. NYC-16) in area bounded by Linden Blvd., Ashford St., Wortman Ave., Hendrix St., Stanley and Schenck Aves. Plans deposit $25.

Ont., Rockcliffe—SCHOOL—A. J. E. Smith, c/o Central Mortgage & Housing Corp., 395 Fleet St. W. Toronto, 24 room, frame school at D.N.D. Housing. Approx. $425,000. Plans deposit $25.

December 21

Colo., Greeley—SCHOOLS—Ind. Educ., Junior High School Bldg., 1 story, 8 classroom brick Twelfth Street-Grade School. Approx $250,000; 1 story part bsmut., 30,600 sq. ft., Fourth Street Grade School. Approx. $300,000. Atchison & Kloverstrom, 1254 Monaco Parkway, Denver, archs. CD 5/26.

Pa., Honesdale—HOSPITAL—General State Auth., Harrisburg, tubercular hospital at Farview State Hospital. $600,000.

December 23

†Ky., Tompkinsville—STORAGE—Dpt. Army, National Guard Bureau, Acting U. S. Property & Disbursing Officer for Kentucky, P. O. Box AA, Cherokee Station, Louisville, motor vehicle storage bldg., at Kentucky National Guard.

December 28

Calif., Norwalk—WOMEN'S INDUSTRIAL— State Div. Architecture, P. Wks. Bldg., Sacramento, rein.-con. Womens Industrial Bldg. at Norwalk State Hospital, Anson Boyd, Sacramento, state archt.

January 3

†Texas—APARTMENT—U. S. Eng., 606 Santa Fe Bldg., Galveston, converting office bldg. into apartments, converting garage into operations bldg., etc., Hords Creek Dam and Reservoir, Colorado River Basin, CIVENG-41-243-50-110.

January 5

†Arizona—SUBSTATION—Bureau Reclamation, Dpt. Interior, Phoenix, constr. Coolidge substation, approx. 1½ mi. north of Coolidge, Davis Dam Proj., Spec. 2849. L. N. McClellan Bldg., 1-A, Denver Federal Center, Denver, Colo., ch. engr.

January 9

Tex., Alpine—CAFETERIA, etc.—Sul Ross State Teachers College, Alpine, cafeteria and 2 story masonry fine arts bldg., $250,000; 2 story, masonry, concrete girls dormitory, concreet slab fdn., $250,000. Plans deposit $10 each. Harvey P. Smith, Natl. Bank Commerce Bldg., San Antonio, archt. Frank T. Drought, 117 W. Pecan St., and W. E. Staley, Chandler Bldg., San Antonio, engrs. CD 10/4/45.

LOW BIDDERS

●**Calif., Bellflower**—HIGH SCHOOL—Excelsior Union High School Dist., 15711 Pioneer Blvd., Bellflower, Nov. 28, high school, Woodruff Ave., from Gallinger Constr. Co., 1209 W. 109 St., Gardena, **$1,373,378.** CD 11/9.

Calif., Richmond — SCHOOL — Richmond School Dist., 1108 Bissell St., Nov. 22, 16 classroom, concrete El Cerrito High School addn. from Elmer Freethy, 1432 Kearney St., El Cerrito, **$478,627.**

Colo., Denver—SCHOOL—City and Denver Co. School Dist. 1, 414 14 St., Nov. 23, general contract, 2 story, part bsmnt. 170x270 ft. Lucius Hallett Grade School, 30 and Jasmine Sts., from Industrial Constructors, 3860 Galapago St. **$416,000.** CD 9/27.

●**Conn., New London**—HOUSING—City of New London Housing Auth., Richard H. Pugh, chn., Dec. 1, 2 story, bsmnt., 144-family unit garden type bldgs., Coleman St., from Associated Constr. Co., 525 Main St., Hartford, **$1,737,000.** CD 11/22.

Md., Rising Sun—SCHOOL—Bd. Educ., Elkton, 2 story, brick, steel, block, limestone, concrete, Rising Sun Elementary and Junior High Schools, from Rice & Weidman, Manheim Pike and Keller Ave., Lancaster, Pa., **$665,134.** Chas. E. Daniels, Federal Land Bldg., Balti-

more, mech. engr. V. R. P. Saxe, 100 W. Monument St., Baltimore, structural engr. CD 8/1.

Md., Upper Marlboro—SCHOOLS—Prince Georges Co. Bd. Educ., Nov. 29, Fairmount Heights Negro High School addn., Reed St., Fairmount Heights and Langley Park School, Upper Marlboro, from B. & J. Constr. Co., 3432 Connecticut Ave., Wash., D. C., **$567,430** and **$328,686** respectively. CD 10/17 and 11/25 respectively.

Mich., Bloomfield Hills—SCHOOL—Bloomfield Hills School Dist. 2, Max H. Fruhauf, secy., 1 story, 66x79x208x219 ft., L-shaped, masonry, stone structural steel, concrete, Vaughn School addns., alterations, from Schurrer Constr. Co., 151 Oakland St., Pontiac, **$482,022**, O'Dell, Hewlett & Luckenbach, 2300 Dime Bldg., Detroit, archts.

●**N. Y., Brooklyn**—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Zone 1, Nov. 30, general contract P. S. 14, Avenue X and Brown St., from John T. Broady & Co., 606 W. 47 St., New York, Zone 19. **$1,969,100.** CD 11/21.

N. Y. Poughkeepsie—HOSPITAL ELECTRICAL WORK—Bureau Contracts & Accounts, Albany, Nov. 30, electrical work for rewiring main group, Central Group and Edgewood at Hudson River State Hospital, from Kaplan Electric Co., 128 E. 16 St., New York, and Delta Electric, Inc., 14 Martine Ave., White Plains. **$118,711.** CD 9/27/45.

N. Y., Rochester—BUILDING—Bureau Contracts & Accounts, Albany, Nov. 23, general contract, Orleans Bldg., Bldg. No. 43, addn. and alterations, Rochester State Hospital, from Le Chase Constr. Corp., 752 Plymouth Ave. N., **$432,000.** CD 10/26.

N. C., Charlotte—SCHOOL—Mecklenburg Co. Bd. Educ., Courthouse, Nov. 22, East High School, from Robert H. Pinnix, Gastonia, **$463,-039.** CD 10/28.

Tex., Houston—HIGH SCHOOL, etc.—Houston Independent Schools Dist., 1600 Washington St., Nov. 23, Charles Deady High School addn., also 38x184 ft. shop, 35x60 ft. bathhouse, from Lubbock Constr. Co., Box 13007, **$651,790.** Est. $450,000. CD 11/10.

CONTRACTS AWARDED

Ark., Blytheville—HOUSING—Blytheville Housing Auth., general contract 75-unit housing, to Fraser Constr. Co., Ft. Smith. **$460,000.** CD 10/28.

Calif., Los Angeles—ENGINEERING—Bd. Regents University of California, 405 Hilgard Ave., 4 story, 75x206 ft., rein.-con., brick engineering bldg., Unit B, to Robert E. McKee, 4700 San Fernando Rd., **$719,900.** Bids 10/13, awarded 11/18. CD 10/19, under LB.

Calif., San Diego—SCHOOL—San Diego Unified School Dist., 825 Union St., one 6x192 ft. and one 65x139 ft., rein.-conc. schools, to L. C. Curry, 1791 B St. **$387,263.** CD 10/28.

Conn., Wallingford—SCHOOL—Bd. Educ., Town Hall, 2 story, basmnt. school, Main St., to W. J. Meglin, Inc., 51 Elm St., Naugatuck, **$655,355.** Bids 11/14. CD 11/22, under LB.

Ky., Louisville—SCHOOL—Bd. Educ., 506 W. Hill St., Zone 8, general contract MacArthur School, Southland Blvd. and Old Third St. Rd., to F. W. Owens Co., 119 N. Fifth St., **$903,500.** Bids 11/25. CD 11/29, under LB.

Mass., Norwood—HOUSING—Town of Norwood Housing Auth., Roger Pearson, chn., Town Hall, veterans housing Proj. 200-1, Roosevelt Ave., to A. F. Smiley Constr. Co., 115 Trenton St., Pawtucket, R. I., **$693,000.** CD 5/4/49, under LB.

●**N. M., Alamogordo**—FAMILY QUARTERS—U. S. Eng., P. O. Box 1538, Albuquerque, family apartments, Serial No. ENG-20-095-50-12, to Maxes & Leftwich, Lubbock, Tex., **$800,-238.** Bids 9/15. CD 9/21, under LB.

●†**Tenn., Oak Ridge**—GASEOUS DIFFUSION UNIT—U. S. Atomic Energy Comn., Oak Ridge, 4th unit gaseous diffusion unit, K-31, to Maxon Constr. Co., Inc., 131 N. Ludlow St., Dayton, O., Approx. **$162,000,000.** Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit,

COMMERCIAL BUILDINGS

LOW BIDDERS

Calif., Claremont—GYMNASIUM—Pomona College, 1 and part 2 story 30,500 sq. ft. memorial gymnasium, from J. E. Haddock Ltd., 3578 E. Foothill Blvd., Pasadena. **$271,720.** Est. $260,000. CD 10/26.

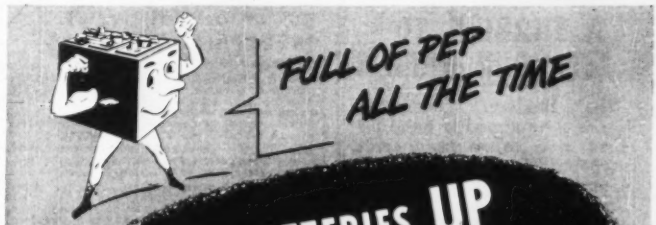
●**Calif., Downey**—DWELLINGS—Hancock Homes, Inc., 1500 Lincoln Blvd., Los Angeles, 240 frame, stucco dwellings. Owner builds, **$1,250,000.** Arthur L. Minasian, 1898 Crenshaw Blvd., Los Angeles, archt.

●**Calif., Los Angeles**—APARTMENT—Wilshire Manor Corp., 405 N. Bedford St., Beverly Hills, 10 story, rein.-con. apartment, Beverly Glen and Wilshire Blvds. owner builds, **$1,500,000.** Martin Stern, Jr., 8812 Burton Way, Beverly Hills, archt.

Calif., Mountain View—APARTMENT—Owner, c/o contractor, 50-unit apartment, Pieracci Way to Clarence L. Speer, 384 E. McKinley, Sunnyvale. Approx. **$300,000.**

Calif., San Lorenzo (near San Leandro)—RESIDENCES—C. H. McEntyre, 1464 Franklin St., Oakland, 44 residences, W. Ave. 150 Churchill and Dover Sts. Owner builds. **$308,000.**

Ont., Hamilton—RESEARCH—McMaster University, R. W. Frost, secy., 2 story, basmt., rein.-con. T-shaped 44x120 ft. Nuclear re-



KEEP BATTERIES UP
--COSTS DOWN
Support More Accessories

WITH A Leece-Neville
HIGHER-OUTPUT A-C GENERATING SYSTEM

On construction vehicles employed on and off the highway . . . the vastly higher output of Leece-Neville A-C Generating Systems—even with engines idling—keeps batteries fully charged at all times. The costly part of battery maintenance is eliminated . . . life of batteries prolonged. *So much* current is generated you can use accessories without limitation!

Proved in thousands of applications on all types of equipment during the past three years, A-C generating the Leece-Neville way pays for itself many times over. It will *pay you* to return coupon below for all the facts!

ALTERNATOR of Leece-Neville 7-Volt A-C System for every requirement up to and including 80 amperes. 14-Volt Systems available with ratings of 60, 80, 100 and 150 amperes.

LEECE-NEVILLE
Pioneer and STILL Quality Leader
CRANKING MOTORS • GENERATORS • VOLTAGE REGULATORS • SWITCHES

VOLTAGE REGULATORS
CRANKING MOTORS
GENERATORS
SWITCHES

THE LEECE-NEVILLE CO., Department C, Cleveland 14, Ohio
Please send descriptive literature on your *Higher-Output* A-C Generating Systems.

NAME .....
ADDRESS .....
CITY ..... STATE .....

"Gunite" . . . . . the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE "CEMENT GUN"

A TURBINE TO FIT YOUR NEED

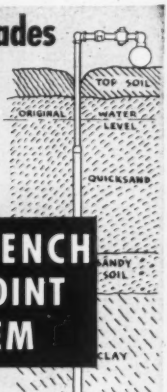
The Baldwin Locomotive Works is equipped to build turbines in a range from small fractional horsepower water motors up to the largest, for any required head, from the highest to the lowest. Available types include impulse, propeller, Francis and adjustable blade.

A century of sound, practical engineering experience has helped Baldwin produce some of the most advanced developments in hydraulic turbine equipment.

Bulletin 252 shows the complete line.

The Baldwin Locomotive Works, Philadelphia 42, Pa. The Pelton Water Wheel Company, 2929 Nineteenth Street, San Francisco, California. Offices: Boston, New York, Philadelphia, Houston, St. Louis, Chicago, Cleveland, Pittsburgh, San Francisco. In Canada: The Baldwin Locomotive Works of Canada, Ltd., Toronto, Ontario.

Dry Subgrades Quickly at Low Cost!...



MORETRENCH WELLPOINT SYSTEM

Remember that name

Send for details on this faster, lower-cost dewatering method.

MORETRENCH CORPORATION
90 WEST ST., NEW YORK 6
CHICAGO, ILL. • TAMPA, FLA. • HOUSTON, TEX.

search bldg., 35x68 ft. rear wing, air-conditioning, to Frid Constr. Co., Ltd., 128 King St. E. Approx. **$550,000.** Bids 11/23. CD 10/31

INDUSTRIAL BUILDINGS

CONTRACTS AWARDED

Calif., Redwood City—SUPER MARKET—Michael & Wm. Bouskos, c/o contractor, 125x220 ft., steel frame super-market with granite walls, refrigeration, porcelain enamel tower, to Mills Constr. Co., 405 Montgomery St., San Francisco. Approx. **$300,000.** J. Lloyd Conrich, 593 Market St., San Francisco, archt.

Tex., Kress—PLANT—Kress Gin Co., Kress, cotton gin plant, own forces. **$85,000.**

Alta., Edmonton — SHOP — Singer Sewing Machine Co., 10356 Jasper Ave., 2 story work shop and office, to Poole Constr. Co., Ltd., 10562 109 St., Edmonton. Approx. **$140,000.** Rule, Wynn & Rule, 1422 Jasper Ave., Edmonton, archts.

Que., Three Rivers — PLANT — Coca-Cola Ltd., 90 Broadview Ave., Toronto, Ont., 103x232 ft. bottling plant, incl. bottling section, warehouse and garage, Blvd. St. Olivier, to G. A. Gruninger & Sons, 1001 Lavilolitette St., Approx. **$350,000.**

UNCLASSIFIED

BIDS ASKED

December 21

†D. C., Wash.—GATEHOUSE—Pub. Bldgs. Admin., 18 and F Sts. N. W., Wash. 25, D. C., gate house at National Arboretum. CD 5/25/43.

December 28

Calif., Agnew — ELECTRICAL DISTRIBUTION SYSTEM—State Div. Architecture, P. Wks. Bldg., Sacramento, electrical distr. sys. at Agnews State Hospital. Anson Boyd, Sacramento, state archt.

December 29

†Calif. — STRUCTURAL STEEL — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver Colo., structural steel, incl. girders, diaphrams, bearings, and field rivets for railroad bridge at Friant-Kern canal, Station 6261 plus 80.62 Central Valley Proj. Spec. 2859. L. N. McClellan, ch. engr.

PROPOSED PROJECTS

WATER SUPPLY

●Ark., Little Rock—City of Little Rock Waterworks Comn., water supply **$8,000,000-$11,000,000.** L. A. Jackson, c/o Robinson Auditorium, Little Rock, engr. CD 11/29/44

Fla., Sarasota—City, City Hall, plans by Smith & Gillespie, 221 W. Adams St., Jacksonville, water treatment plant. **$800,000.** CD 2/1/45.

●Ill., Chicago—Illinois & Indiana Water Co., c/o R. W. Berglund, engr., 327 S. LaSalle St., Zone 4, water dist. sys. and filtration plant to serve with Lake water, Chicago Heights, Flossamor, Markham, Hazelcrest, Glenwood Springs, Homewood, Ill. **$7,000,000.** Geo. B. Massey, 53 W. Jackson St., Zone 4, consult. engr.

O., Conneaut—City, City Hall, elevated water tank. **$150,000.** Havens & Emerson, 1140 Leader Bldg., Cleveland, consult. engrs. Wm. Kantola, city engr. CD 12/17/43.

Ont., Renfrew—Town, L. R. Brand, clk., construct and equipment of filtration plant. Approx. **$260,000.** Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs. CD 7/8.

SEWERS, WASTE DISPOSAL

Calif., Indio—Indio Sanitation Dist., Indio, voted $675,000 bonds, sewage facilities, treatment plant **$365,000;** new collection lines **$84,000;** future line **$125,000.** Koebig & Koebig, Rowan Bldg., Los Angeles, engrs. CD 3/14/46.

●Fla., Sarasota — City, City Hall, sanitary sewer lines, force mains, lift stations, new disposal plant. **$2,000,000.** Russel & Axon, Daytona Beach, engrs. and archts. CD 2/22.

Mo., St. Charles—City, City Council, City Hall, voted $180,000 bonds Nov. 22, trunkline sewers and repairs to storm water facilities incl. 3 mi. trunk sewer at west edge of city. **$100,000;** trunk line sewer in southwestern part of city, **$30,000.** C. H. Owens, city engr. CD 9/26.

Wash., Connell—Town, Town Hall, sewerage sys., **$100,000.** W. L. Maloney, Symons Bldg., Spokane, consult. engr.

Wash., Pomery—City, City Hall, sewage disposal plant. **$175,000.** CD 2/29/45.

Ont., Chesley — Eldersblee Twp., J. N. Young, clk., tile, stone or timber drain. Approx. **$200,000.**

BRIDGES

Idaho, Boise—City, City Hall, 300 ft. rein.-con bridge over Boise River. **$180,000.**

Wash., Duvall—King Co., County-City Bldg., Seattle, Zone 4, rein.-con. girder bridge with 160 ft. center span and two 120 ft. approach spans, over Snoqualmie River. **$350,000.** Homer Hadley, Seaboard Bldg., Seattle, Zone 1, consult. engr. D. L. Evans, co. engr.

Wash., Seattle—King Co., County-City Bldg., Seattle, Zone 4, 144 ft. deck type, plate girder bridge with concrete approaches over Cedar River and railroad tracks near old Cedar Mountain mine. **$110,000.** Cecil Arnold, New World Life Bldg., Zone 4, consult. engr. D. L. Evans, co. engr. CD 11/10/48.

●Alta., Edmonton — Municipality, City Hall, widen, strengthening high level bridge from street car to trolley bus operation, paving, etc. **$1,250,000.** J. C. Haddon, City Hall, city engr.

Que., Victoriaville — Municipality, viaduct under Canadian National R.R. tracks at Notre Dame St., **$100,000.** Canadian National Rys. 360 McGill St., Montreal, engrs.

STREETS AND ROADS

Ill., Olney—City, voted **$200,000** bonds Nov. 22, improv. various streets.

Kan., Emporia—City, c. conc. paving 19 blocks streets, **$125,000.**

●Alaska, Ketchikan—City, City Hall, extend Water and Tongass Sts., **$2,000,000.** CD 2/3/47.

Que., Westmount—City, widen., paving certain streets, construct city garage and existing garage alterations, installing traffic lights, etc. Approx. **$573,500.** P. E. Jarman, c/o owner, engr.

EARTHWORK, WATERWAYS

†Calif., Los Angeles—U. S. Eng., 751 S. Figueroa St., concrete lining of Compton Creek Channel at 103 St., **$700,000.**

Wash., Spokane—Irrigation Dist. 10, c/o Fred J. Cunningham, atty., rehabilitation main south branch canal in Spokane Valley from Corbin canal near Spokane Bridge through center of valley to near Park Rd. **$238,000.**

AIRPORTS AND AIRBASES

Conn., Windsor Locks—TERMINAL BLDG. —State, Francis S. Murphy chn., Conn. Aeronautics Comn., State Office Bldg., Hartford, plans by Phelps Barnum & W. Stuart Thompson, 20 Park Ave., New York, N. Y., terminal bldg., Bradley Field. **$800,000.** CD 1/19/48.

†Minn., Duluth—ADMINISTRATION BLDG. —U. S. Gov't., Major R. M. Jerome, Commanding Officer, 178th Fighter Squadron, Williamson-Johnson Municipal Airport, admin. bldg. addn. to National Guard facilities, supply warehouse and motor vehicle maintenance shop, Williamson-Johnson Municipal Airport, **$509,000.**

LATIN AMERICA

Mexico, Ciudad Juarez—State Govt., Palacio del Estato, Chihuahua, Chihuahua, plans sports city. **$800,000**

Mexico, Mexicali—Territorial Govt., Antonio Garcia Gonzalez, Gov., Palacio Territorial, Mexicali, B. C., Mexico, plans WW. **$1,375,000.** CD 1/30/46

Mexico, Mexico City—A. Aboud, Hotel Reforma, Mexico, D. F., Mexico, plans clothing factory. **$250,000.**

Mexico, Mexico City—Cumex, S. A. V. Carranza, 93-11, Mexico, D. F., plans scissors factory. **$300,000.**

Mexico, Mexico City—Municipal Govt., Palacio Municipal, Mexico, D. F., Mayor Fernando Casa Aleman, plans three art theatres. **$800,000**

Mexico, Monterrey — Northeastern Meat Packers Assn., c/o Ing. Gustavo P. Serrano, Gante, 15, Mexico, D. F., plans 4 meat refrigeration plants. **$2,750,000.**

Trinidad, Port of Spain—Govt. of Trinidad, Port of Spain, plans airfield improv. and seaplane base constr., **$500,000.** Colonial Development Board, London, England, engr.

PUBLIC BUILDINGS

Ala., Huntsville — HIGH SCHOOL — City plans by Van Keuren, Davis & Co., American Life Bldg., Birmingham, high school. Approx. **$250,000.**

Ala., Montgomery — HOUSING UNITS — Montgomery Housing Auth., c/o Pearson, Tittle & Narrows, archts., First National Bank Bldg., 180 housing units to be known as Palace Court Apartments. Approx. **$500,000.** CD 10/27.

Ala., Ozark—HOSPITAL—Dale County Hospital Assn., c/o H. L. Holman, Jr., hospital. **$600,000.** Bids about Aug. 15 cancelled. CD 7/22

Ala., Tuscaloosa—DORMITORY—University of Alabama, Tuscaloosa, plans by Miller, Martin & Lewis, Title Guarantee Bldg., Birmingham, 3 story, 30,000 sq. ft. athletic dormitory. **$300,000.**

Calif., Fresno—HEALTH CENTER—Fresno Co., Courthouse, plans by Phillip S. Buckingham, 1922 Clinton Ave., large health center on County General Hospital Grounds **$400,000.**

Calif., San Rafael — HIGH SCHOOL — Bd. Educ., E. Mission St., **$795,000** bond election Jan. 17, 15 classroom high school, cafeteria, tracks and bleachers. CD 4/5/46.

●Conn., Norwich — HOUSING — City of Norwich, Norwich Housing Auth., W. B. Barrett, chn., plans by Chandler & Palmer, 16 Frank-

Jin St., 110-family unit garden apartments, **$1,100,000.**

●Conn., Norwich — POWER PLANT — State, Raymond S. Thatcher, comptroller, State Capitol, Hartford, plans by Newman E. Argraves & Assoc., 70 College St., New Haven, brick, steel, concrete power plant at Norwich State Hospital, **$1,625,000.** CD 1/19.

Ga., Cedartown — HOUSING — Cedartown Housing Auth., Cedartown, plans by Cooper, Bond & Cooper, Henry Grady Bldg., Atlanta, 54 housing units. Approx. **$250,000.** (**Correction**—number of units). CD 11/18.

Idaho, Idaho Falls—SCHOOL—School Dist. 91, plans by Fetzer & Fetzer, Zions Saving Bank Bldg., Salt Lake City, Utah, high school, **$925,000.** CD 10/11.

●Idaho, Pocatello — HOUSING — Pocatello Housing Auth., Oak and Taft Ave., 200 housing units, **$1,400,000.** CD 12/11/44.

●Ill., Chicago—FIELD HOUSE—Chicago Park Dist., 425 E. 14 St., Zone 5, 2 story field house in Washington Park, **$1,000,000,** Ralph Burke, 20 N. Wacker Dr., Zone 6, park dist. engr. CD 6/11/45.

Ill., Morris—SCHOOL—Morris School Dist., plans by Berger & Kelley, 44 Main St., Champaign, 2 story, bsmnt., high school, **$700,000.** CD 4/9/46.

●Ia., Keokuk—SCHOOL—Bd. Educ., Keokuk, Senior High School, **$1,250,000.**

●Kan., Topeka—HOSPITAL—City, City Hall, voted **$2,000,000** bonds, Stormont Hospital, Grinel & Ekblad, New England Bldg., Topeka, archts. CD 9/30.

●Kan., Wichita — SCHOOLS — Bd. Educ., Admin. Bldg., 429 S. Broadway, Zone 2, voted bonds, Robinson Intermediate School, 328 N. Oliver St., **$270,000,** Forsblom & Parks, Beacon Bldg., Wichita, addn., Isaac Newton Intermediate School, Skinner and Grove Sts., **$883,000,** Hibbs & Robinson, 519 S. Broadway, Wichita, archts. CD 11/23.

●La., Monroe—HOUSING—Monroe Housing Auth., Monroe, 400 housing units, **$3,100,000,** CD 10/24.

Md., Annapolis—WELFARE—Comrs. Anne Arundel Co., Court House, plans by Harder & Dressel Assoc., Baltimore Annapolis Hy., Glenburnie, health and welfare bldg., **$400,000,** Van Rennsalaer Saxe, 100 W. Monument St., Baltimore, archt., James Posey, 10 E. Pleasant St., Baltimore, mech. engr.

Mass., Abington — SCHOOL — Town, School Dpt., plans by W. M. Gaffney, 42 Potter St., Hyannis, Junior High School, adjacent to Senior High School, **$500,000.** CD 1/13.

Mass., Amesbury—SCHOOL—Town, School Bd., C. English, supt., plans by S. W. Haynes & Assoc., 136 Main St., Fitchburg, 2 story, bsmnt., brick, steel high school alterations, addns. **$250,000.**

Mass., Amherst — DINING — Commonwealth of Mass., R. D. Hawley Trans., University of Mass., plans by Morris W. Maloney, 220 Dwight St., Springfield, brick, steel, lining bldg., University of Mass. Campus, **$700,000.**

Mass., Ashland—SCHOOL—Towns of Ashland and Hollister, Bds. Selectmen, Town Hall, Ashland, brick regional high school, **$250,000.**

Mass., Belchertown—SCHOOL—Town, Bd. Educ., plans by Wm. G. Upham, 709 Washington St., Norwood, 2 story, bsmnt., brick, steel school, **$250,000.**

Mass., Medfield—SCHOOLS—Town, Bd. Educ., Medfield, plans by M. A. Dyer Co., 8 Beacon St., Boston, brick, school, approx. **$250,000;** plans by Wm. G. Upham, 709 Washington St., Norwood, 2 story bsmnt., brick, steel high school addn., **$250,000.**

Mass., Pittsfield—SCHOOL—City, F. X. Brugger, chn., School Bldg. Comn., plans by S. W. Haynes & Assoc., 336 Main St., Fitchburg, 2 story, bsmnt., 80x130 ft. brick, steel school, CD 4/19, **$500,000.**

Mass., Randolph—SCHOOL—Town, School Planning & Bldg. Comn., plans by Harry J. Korslund, 153 Nahatan St., Norwood, Junior and Senior High School, N. Main St. approx. **$250,000.**

Mass., Somerset — SCHOOLS — Town, A. T. O'Toole, supt. Schools, plans by Israel T. Aimy, 58 N. Main St., Fall River, 2 story, bsmnt., brick, steel, junior high school **$300,000;** and 1 story, bsmnt., brick, steel school, Randall Ave. Section, **$250,000.** CD 3/9.

●Mich., Ann Arbor—HOSPITAL—Michigan Union Bldg., University of Mich., 530 S. State St., plans by Eberle M. Smith Assoc. Inc., 1202 Francis Palms Bldg., Detroit, several story, rein.-con., structural steel, masonry, Michigan University Union Bldg., addn., **$2,000,000.**

Mich., Coldwater — NURSERY — Mich. Dpt. Admin., A. N. Langius, 115A State Office Bldg., Lansing, plans by Harley, Ellington & Day, Inc., 153 Elizabeth St., Detroit, 2 unit, masonry, concrete, structural steel nursery for Coldwater State Home Training School, **$864,-000.** CD 6/21.

Mich., East Detroit—CIVIC CENTER—City, 16063 E. Nine Mile Rd., plans by Louis G. Redstone, 3510 Woodward St., 1 story, stone, brick, concrete, rein.-con., structural steel civic center, **$250,000.**

Mich., St. Clair Shores — SCHOOL — Bd. Educ., Wm. Corells, pres., 21832 Englehardt St., plans by Leo Bauer, 534 Free Press Bldg., Detroit, brick, concrete, structural steel school, **$250,000.**

Minn., Columbia Heights — SCHOOL — Bd. Educ., G. Miller, clk., voted **$850,000** bonds, high school and grade school addns. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, archts. CD 11/21.

Minn., Comfrey—SCHOOL—Bd. Educ., Comfrey, voted **$260,000** bonds, school addn. Architects Associated, 500 Sexton Bldg., Minneapolis, archt.

Minn., Litchfield — HOSPITAL — Litchfield Hospital Assn., c/o Long & Thorshov, arents. 400 Metropolitan Life Bldg., Minneapolis, voted **$400,000** bonds Nov. 8, hospital. Frost & Lofstrom, Willmar, assoc. archts. CD 7/11.

Minn., Minneapolis — SCHOOL — Bd. Educ., R. A. Putnam, assoc. supt. for business affairs, 801 Broadway, 1 story, grade school, between 56 and 57 Sts. and between 23 and 24 Aves. South. Approx **$250,000.**

Minn., Mora—SCHOOL—Bd. Educ., G. P. Beckstrom, clk., plans by L. C. Pinault, St. Cloud, school addn, **$250,000.**

●Minn., Richfield (Minneapolis P. O.)—SCHOOLS—Bd. Educ., H. E. Rumpel, supt., voted **$1,950,000** bonds Nov. 18. Junior-Senior High School, Harriet Ave. and 72 St., **$1,475,-000,** grade school, 75 St. and Penn Ave. S., **$475,000,** Long & Thorshov, 400 Metropolitan Life Bldg., Minneapolis, archts.

●Miss., Biloxi—HOUSING—Biloxi Housing Auth., 200 housing units, **$1,500,000.**

●Mont., Bozeman — HOUSING — Bozeman Housing Auth., housing, **$1,000,000.**

Neb., Omaha—SCHOOL—Bd. Educ., 3902 Davenport St., Jefferson School addn. **$275,000.**

†N. H., Durham—POST OFFICE—Pub. Bldgs. Admin., 18 and F Sts., N. W., Wash. 25, D. C., post office, etc. **$300,000,** CD 11/7/45.

N. J., Mount Holly—HOSPITAL—Burlington County Hospital, c/o George Von Uffel, Jr., archt., 30 Warwick Rd., Haddonfield, hospital addn. **$400,000.** Louis T. Klauder & Assoc., Lincoln Liberty Bldg., Phila., Pa., consult. engrs.

N. J., Newark—HOUSING—Newark Housing Auth., 57 Sussex Ave., 3,500 housing units.

†N. Y., Brooklyn—COURTHOUSE, etc.—Pub. Bldgs. Admin., 18 and F Sts., N. W., Wash. 25, D. C., courthouse, **$8,570,000;** post office Station E, **$580,000;** post office Station S, **$366,000.**

†N. Y., Buffalo—POST OFFICE—Pub. Bldgs Admin., 18 and F Sts. N. W. Wash. 25, D.C., post office, etc. CD 11/2/45.

†N. Y., Jamestown—POST OFFICE, etc.—Pub. Bldgs. Admin., 18 and F Sts. N. W. Wash. 25, D. C., post office and courthouse, **$1,080,-000,** CD 11/13/45.

●†N. Y., New York—POST OFFICE, etc.—Pub. Bldgs. Admin., 18 and F Sts. N. W. Wash. 25, D. C., post office and post office garage, Manhattanville Station, **$2,400,000,** CD 10/5/45.

†N. Y., Oneonta—POST OFFICE—Pub. Bldgs. Admin., 18 and F Sts. N. W. Wash. 25, D. C., post office, etc. **$310,000,** CD 11/14/45.

†N. Y., Tarrytown—POST OFFICE—Pub. Bldgs. Admin., 18 and F Sts. N. W. Wash. 25, D. C., post office, etc. **$311,000,** CD 11/14/45.

O., Bedford—SCHOOL—Bd. Educ., c/o Leo Kucera, clk., Washington Ave., plans by Charles Bacon Bartlett, 2064 Kenilworth Blvd., Cleveland, 1 story, bsmnt., brick, block, steel school and playground in Rural Rd. sect. Approx. **$250,000.**

O., Bryan—SCHOOLS—Bd. Educ., Bryan, plans by McLaughlin & Keil, Lima, school building constr. **$950,000,** CD 11/25.

O., Georgetown—HOSPITAL—Courts, Brown Co., Dr. George P. Tyler, chn., Georgetown, plans by Ineche, Brandt & Shaw, 66 E. Broad St., Columbus, 1 story, 42 bed brick hospital, **$600,000.** CD 11/17/45.

O., Hamilton—SCHOOL—Bd. Educ., 322 Dayton St., plans by Outcalt, Guenther & Assoc., 12134 Shaker Square, Cleveland, 2 story, concrete bsmnt., brick Harrison Monroe School, **$450,000,** CD 11/19.

O., Hamilton—HOSPITAL—Butler Co. Hospital Bd., Trustees, c/o George Warndorff, Rentchler Bldg., plans nearing completion by Mueller-Hair & Hetterich, Anthony Wayne Hotel Bldg., 2 or 4 story, brick, stone hospital, **$500,000,** Samuel Hannaford & Sons, Dixie Terminal Bldg., Cincinnati, archts. and consult. engrs. CD 4/19.

O., Hamilton — SCHOOL — Fairfield Local School Dist., Raymond Orr, pres., R. R. No. 8, voted bonds, 2 story bsmnt. brick high school, Fairfield Twp., **$950,000.** Thomas D. McLaughlin & John J. Keil, Lima, archts.

O., Middletown—SCHOOLS—Bd. Educ., R. H. Snyder, clk., 1st Natl. Bank Bldg., plans by Thomas D. McLaughlin & John J. Keil, Lima, for 2 story, bsmnt. Sunset View Rd. **$450,000;** 2 story, bsmnt., brick South School, **$450,000.** CD 11/25.

O., Peebles—HIGH SCHOOL—Bd. Educ., Dr. S. F. Peipers, pres., Peebles, voted bonds 3 story, concrete bsmnt, brick superstructure high school, **$250,000.** Grunkemeyer & Sullivan & Assoc., 3717 Eastern Ave., Cincinnati, archts.

O., Sharonville — SCHOOL — Bd. Educ., Sharonville sketches by Gruenkemeyer & Sullivan & Assoc., 3717 Eastern Ave., Cincinnati, 2 story, bsmnt, brick, concrete school addn. **$355,000.**

Okla., Drumright—HOSPITAL—Creek Co., Sapulpa, hospital **$300,000.**

●†Okla., Oklahoma City—POST OFFICE—Pub. Bldg Admin., 18 and F Sts. N. W., Wash. 25, D. C., 2 story parcel post bldg., S. W. 5 and Broadway, **$1,000,000.** CD 6/11/45.

†Okla., Tulsa.—CHAMBER OF COMMERCE—U. S. Chamber of Commerce, c/o Fister, exec.-vice pres., Akdar Temple, plans by Harry A. Morris, 7732 E. Jeff St., Detroit, Mich., and Donald Honn, superv. archt., 2614 E. 1st St., 3 story, rein.-con. Junior Chamber of Commerce, air-conditioning. **$220,000-$250,-000.** CD 6/23.

Pa., Allentown—HOSPITAL—General State Auth., 18 and Herr Sts., Harrisburg, plans by Wolf & Hahn, 459 Hamilton St., 60 bed hospital at Allentown State Hospital, **$600,000,** A. F. Jones, c/o owner, ch. engr. CD 9/29.

Pa., East Stroudsburg—BUILDINGS—Dpt. Pub. Instruction, Harrisburg, administration bldg. and library, **$235,000;** campus laboratory school, **$275,000;** laundry, **$75,000;** men's dormitory, **$525,000,** all foregoing at East Stroudsburg State Teachers College. A. F. Jones, c/o owner, ch. engr.

Pa., Laurelton—HOUSING—General State Auth., 18 and Herr Sts., Harrisburg, plans by George S. Edell, 117 S. 17 St., Phila., addnl. housing for girl patients at Laurelton State Village. **$700,000.** A. F. Jones, c/o owner, ch. engr. CD 1/15/47.

●Pa., Mayview—BUILDING—General State Auth., 18 and Herr Sts., Harrisburg, plans by Palmerton, Patterson & Fleming, Law and Finance Bldg., Pittsburgh, 8 men's patients bldg. at Mayview State Hospital, **$2,500,000,** A. F. Jones, c/o owner, ch. engr. CD 9/29.

●Pa., Mayview—BUILDING—General State Auth., 18 and Herr Sts., Harrisburg, plans by Altenhof & Brown, 210 Grant St., Pittsburgh, 8 buildings for female disturbed and semi-disturbed patients at Mayview State Hospital, **$2,378,250.** A. F. Jones, c/o owner, ch. engr. CD 6/14.

Pa., Mayview—BUILDING—General State Auth., 18 and Herr Sts., Harrisburg, plans by Charlton, Kann and Bernard, 1500 Bessemer Bldg., Pittsburgh, 150 tubercular patients bldg. at Mayview State Hospital, **$790,000.** A. F. Jones, c/o owner, ch. engr. CD 9/29.

Pa., Oakmont—SCHOOL—Bd. Educ., Oakmont, voted Bonds 2 story, brick, block school, **$450,000.** Ingham, Boyd & Pratt, Empire Bldg., Pittsburgh, archts. CD 12/29/45.

●Pa., Phila.—OFFICE—State of Pennsylvania, Harrisburg, state office bldg. **$3,500,000.**

Pa., Reading — BARRACKS, etc — General State Auth., 18 and Herr Sts., Harrisburg, plans by Paul U. Koch, 320 Washington St., Reading, and examining field for State Police, **$170,000.** A. F. Jones, c/o owner, ch. engr. CD 4/1/47.

Pa., Turtle Creek—SCHOOL—Bd. Educ., R. D. 2, plans by Hunter, Caldwell & Campbell, 3600 5 Ave., Pittsburgh, 2 story, brick, steel high school addn. Wilkins Twp. **$250,000.**

Pa., Wernersville—NURSES HOME—General State Auth., 18 and Herr Sts., Harrisburg, plans by Wayne M. High & Sons, 230 N. 6 St., Reading, nurses home at Wernersville State Hospital, **$318,000.** A. F. Jones, c/o owner, ch. engr. CD 7/11.

●Pa., Woodville—BUILDING—General State Auth., 18 and Herr Sts., Harrisburg, plans by Ingham, Boyd & Pratt, Empire Bldg., Pittsburgh, disturbed male patients bldg. at Woodville State Hospital, **$1,000,000.** A. F. Jones, c/o owner, ch. engr. CD 9/29.

R. I., Barrington—HIGH SCHOOL—Town, Elmer S. Horton, chn. Barrington, revised plans by Jenks & Ballou, 2600 Industrial Trust Bldg., Providence, bsmt., steel, junior high school, Victory Field, **$900,000,** John E. Nichols, 30 Ten Acre Rd., West Hartford, Conn., consult. engr. CD 9/9/47.

●Tenn., Jackson—HOUSING—Jackson Housing Auth., Jackson, plans by Clarke & Stanhill, Haywood Smith, Charles Ross, J. F. Parish & W. C. Harris, Jr., all of Jackson, 425 housing units. **$1,500,000.** CD 10/25.

Tex., Alpine—CLASSROOM, etc—Sul Ross State Teachers College, Alpine, plans by Harvey P. Smith, Natl. Bank Commerce Bldg., San Antonio, classroom, **$250,000;** administration and science bldg. **$275,000.** Frank T. Drought, 117 W. Peeche St., San Antonio, and H. Voelcker & Sidney E. Stanhill, San Antonio, engrs. CD 10/4/45.

Tex., Bryan — HOUSING — Bryan Housing Auth., Bryan, 90 low-rental housing units, **$742,500.** CD 9/10/47.

Tex., College Station—ADMINISTRATION—Agricultural & Mechanical College of Texas, College Station, plans by Carlton W. Adams, A & M System, c/o owner, and H. Voelcker & Assoc., 2801 San Jacinto St., administration bldg. **$650,000.** CD 3/20.

Tex., Commerce—BUILDINGS—East Texas State Teachers College, Commerce, plans by George L. Dahl, 1904½ Main St., Dallas, women's dormitory, **$350,000;** men's dormitory, **$400,000,** laundry, power and steam plant, **$90,000.** CD 10/13/44.

●Tex., Corpus Christi — HOUSING — Corpus Christi Housing Auth., 3701 Ayres St., plans by Richard S. Colley, 3204 Santa Fe St., and Robert L. Vogler, 225 Cilleander St., Proj. 1, 200 low rent housing units for Negroes (1st year), **$1,200,000;** Proj. 2, 300 low rent housing units, (2nd year), **$1,800,000.** CD 12/2/48.

Tex., Corpus Christi—SCHOOL—Corpus Christi Independent School Dist., Corpus Christi, plans by Smyth & Smyth, Gulf Securities Bldg., masonry school, Baldwin Blvd. between Port and Morgan Sts. **$250,000.** CD 5/13.

●**Tex., Dallas**—HOUSING—Dallas Housing Auth., 2525 Lucas Dr., 1,000 rental housing units (1st year), **$7,250,000**; 1,800 rental housing units (2nd year), **$13,050,000.**

Tex., Eagle Pass—HOUSING—Eagle Pass Housing Auth., Eagle Pass, plans by Phelps & DeWees & Simmons, 1501 Majestic Bldg., San Antonio, 48-unit housing, **$350,000.** CD 9/16.

Tex., El Paso—HOSPITAL—City and El Paso Co., El Paso, $150,000 bonds voted and $112,500 federal funds, masonry city-county mental hospital, **$262,500.** Victor B. Gilbert, City Hall, city engr.

Tex., Henderson—HIGH SCHOOL—Independent School Dist., c/o E. W. Adams, supt., Henderson, plans by Preston M. Geren, 905 N. P. Anderson Bldg., Fort Worth, 1 story, Masonry high school; Negro High School addns., elementary school addns., altering Junior High School, **$500,000.**

Tex., Kingsville—SCHOOL—Kingsville Independent School Dist., Kingsville, voted **$490,000** bonds, school.

Tex., Menard—HIGH SCHOOL—Bd. Educ., C. R. Brace, supt., Menard, plans by Wilson & Patterson, 202 Majestic Bldg., Fort Worth, 1 story, brick, tile high school, concrete fdn. **$325,000.**

Tex., Plainview—HIGH SCHOOL—Independent School Dist., c/o supt., Plainview, plans by Wyatt C. Hedrick, 1095 First Natl. Bank, Fort Worth, high school, **$800,000.** CD 4/25.

Tex., Port Neches—SCHOOL—Bd. Trustees, Port Neches, plans by H. Voelcker & Assoc., 2801 San Jacinto St., Houston, masonry school, concrete slab fdn. **$250,000.**

Tex., San Antonio — SCHOOL — San Antonio Independent School Dist., Lavaca and Water Sts., plans by Phelps & DeWees & Simmons, 1501 Majestic Bldg., remodeling, imprv. Thos. A. Edison School in Los Angeles Heights, **$250,000.** CD 10/8/48, under Los Angeles Heights Independent School Dist., as owner.

Tex., Stephenville — AGRICULTURAL — John Tarlton State College, Stephenville, plans by Wyatt C. Hedrick, 1095 First Natl. Bank Bldg., Fort Worth, 34,000 sq. ft. agricultural bldg., **$735,000.** Carleton W. Adams, 228 Administration Bldg., College Station, A & M System, archt. CD 9/30/48.

Tex., Stephenville — DORMITORY — John Tarlton Agricultural College, Stephenville, plans by Wyatt C. Hedrick, engr. and archt., 1st Natl. Bank Bldg., Fort Worth, dormitory, **$500,000.**

†Va., Falls Church—POST OFFICE—Pub. Bldgs. Admin., 18 and F Sts. N. W., Wash. 25, D. C., post office, etc. **$330,000.** CD 11/30/45.

†Va., Hampton — POST OFFICE — Pub. Bldgs. Admin., 18 and F Sts. N. W. Wash. 25, D. C., post office, etc. **$380,000.** CD 11/30/45.

●**Va., Manassas**—SCHOOLS—Prince William Co., Manassas, school building program, incl. high school in Manassas, **$710,000**; high school in Occoquan Dist., **$471,000**; Negro school in county, **$210,000.**

●**†Va., Norfolk**—POST OFFICE GARAGE—Pub. Bldgs. Admin., 19 and F Sts. N. W., Wash., 25, D. C., post office garage, **$1,790,000.** CD 10/2/45.

†Va., Richmond — POST OFFICE — Pub. Bldgs. Admin., 18 and F Sts. N. W. Wash. 25, D. C., post office, North Side Station, **$340,000.** CD 11/30/45.

†Va., Waynesboro — POST OFFICE — Pub. Bldgs. Admin., 18 and F Sts. N. W., Wash. 25, D. C., post office, etc. **$278,000.** CD 11/30/45.

●**Wash., Pullman**—DORMITORIES—Washington State College, Pullman, plans by D. J. Stewart, Central Bldg., Vancouver, 4 women's dormitories, **$1,250,000.** CD 7/3/45.

●**Wash., Seattle**—HOUSING—Seattle Housing Auth., 825—Yesler Way, bond election Mar. 5, 1,221 family housing units, **$4,000,000.** CD 9/16.

Wash., Sequim—SCHOOL—School Bd., Sequim, voted bonds, school, **$420,000.** CD 12/1/46.

●**Wash., Tacoma**—COUNTY-CITY—City, City Hall and Pierce Co., Courthouse, bond election in Spring, county-city bldg., **$6,000,000.**

●**Wash., Yakima**—HOUSING—Yakima Housing Auth., Yakima, plans by S. P. Bowers, Liberty Bldg., housing, **$1,690,000.** CD 9/30.

●**Wis., Madison** — ATHLETIC PRACTICE — University of Wisconsin, Madison, plans by Fitzhugh Scott & Fitzhugh Scott, Jr., 724 E. Mason St., Milwaukee, 2 story, 232'x500 ft. 60 ft. high, rein.-con. brick, block athletic practice bldg., **$1,000,000.** Ammann & Whitney, 724 E. Mason St., Milwaukee, Zone 2, consult. engrs.

Alaska, Anchorage — HOUSING — Alaska Housing Auth., Juneau, 96 unit veterans housing, **$700,000.**

†T. H., Wailuku — POST OFFICE — Pub. Bldgs. Admin., 18 and F Sts. N. W., Wash. 25, D. C., post office, etc. **$295,000.** CD 12 3/45.

●**N. S. Cole Harbor**—HOSPITAL—Halifax Co., M. Archibald, clk. Halifax, hospital. Approx. **$1,000,000.**

Ont., Barrie—SCHOOL—Bd. Educ., Barrie, plans by Page & Steele, 72 St. Clair Ave., Toronto, 12 room, concrete steel brick school, Toronto St., **$350,000**, plans by S. H. Coon & Son, 4 St. Thomas St., Toronto, 12 classroom concrete steel, brick school, Codrington St., **$300,000.** CD 4/12/46.

Ont., Barriefield—SCHOOL—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, frame, steel school, fdn., at D. N. D. Housing Development., Approx. **$375,000-$450,000.** A. J. E. Smith, c/o owner, engr.

Ont., Belleville—SCHOOL—Bd. Educ., William St., plans by W. A. Watson, 344 Front St., 1 story, no basmt., L-shaped, 65x180x250 ft. concrete block, structural steel, terrazzo flooring school, concrete fdns., MacDonald St. Approx. **$300,000.** L. A. Kells, c/o owner, engr. CD 10/29/46.

Ont., Camp Borden — SCHOOL — Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, frame, steel school, concrete fdn., at D. N. D. Housing Development. Approx. **$375,000-$450,000.** A. J. E. Smith, c/o owner, ch. engr.

Ont., Clinton—SCHOOL—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, frame, steel school, concrete fdn., at D. N. D. Housing Development. Approx. **$375,000-$450,-000.** A. J. E. Smith, c/o owner, engr.

Ont., Hamilton—SCHOOL—Bd. Educ., 3239 Hunter St., Joyce Memorial and Queensdale School, **$255,000.**

Ont., Hamilton—SCHOOL—Bd. Educ., L. T. Spalding, secy., plans by Geo. T. Evans, 36 James St. S., 17 room Senior Public School, Parsaealles Park Survey. Approx. **$900,000.** R. A. Riddell, c/o owner, engr. CD 7/28.

Ont., Morrisburg—SCHOOL—Bd. Educ., Dr. K. A. Blancher, chn., school. Approx. **$250,-000.**

Ont., Newington—SCHOOL—Stormont District High School Area Bd., Dr. J. G. MacLeod, secy., Finch, high school. Approx. **$300,000.**

Ont., Newmarket—HOME—York Co., 57 Adelaide St. E., Toronto, wing County Home for Aged addn. Approx. **$1,000,v00.** Marani & Isabcock, 119 Isabella St., Toronto, engrs.

Ont., Picton—SCHOOL—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, frame, steel school, concrete fdn., at D. M. D. Housing Development. Approx. **$325,000-$420,000.** A. J. E. Smith, c/o owner, engr.

Ont., Sudbury — LIBRARY — Public Library Bd., H. H. Regimbal, chn., plans by L. C. Bridgman, Royal Bank Bldg., London, library. **$300,000.**

Ont., Trenton—SCHOOL—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, frame, steel school, concrete fdn., at D. N. D. Housing Development. Approx. **$375,000-$450,-000.** A. J. E. Smith, c/o owner, engr.

Ont., Windsor—INSTITUTE—Bd. Educ., T. R. Noble, secy., plans by Sheppard & Masson, 52 Chatham St. W., Sandwich Collegiate Institute addn., incl. 12 classrooms, etc. Approx. **$300,000.** L. Wheelton, c/o owner, engr.

Que., Montreal—SCHOOL—Roman Catholic School Comm., 1427 W. St. Catherine St., school, Henri Julian Ave., **$250,000.**

Que., Mount Royal (Postal Dist. Montreal)—CIVIC—Municipality, plans by Luke & Little, 1410 Guy St., Montreal, 2 story, 72x156 ft. concrete, steel, brick civic bldg., Roosevelt Ave **$250,000.**

Que., St. Jean Port Joli — HOSPITAL — Province of Quebec, c/o Ministry of Health, Quebec City, hospital addn. **$310,000.**

Que., Three Rivers — SCHOOL — School Comm., J. U. Gregoire, secy., plans by J. L. Caron, 302 Bonaventure St., 3 story, basmt., brick, block boys school (St. Francois D' Assise St. Paul), **$350,000.**

Sask., Saskatoon—HOSPITAL—Municipality, plans by Frank Martin, 110 Metropolitan Bldg., hospital addn. **$690,000.**

COMMERCIAL BUILDINGS

Calif., San Francisco—SCHOOL—Lucinda Weeks School Foundation, 107 Belvidere St., plans by Leonard S. Mosias, 255 California St., San Francisco, school for retarded children. **$500,000.**

Conn., Stratford — HOUSING — Robert E. Couture, Corners Lane 32 family single frame units, **$260,000.**

●**Fla., Sarasota** — HOUSING — Owner, c/o Ralph & William Zimmerman, archts., Sarasota, housing streets, sewers, utilities, etc. **$2,000,000.** G. M. C. Lucas, Bradenton, consult. engr.

Fla., Sarasota — APARTMENT — Ray Mathias, Sarasota, 8 story 40-unit apartment, **$250,000.** G. M. C. Lucas, 1301 18 St. Bradenton, consult. engr.

Ga., Columbus — APARTMENT DEVELOPMENT—Pine Terrace Apartments, Inc., c/o James C. Wise, archt., 205 Techwood Dr., Atlanta, apartment development. Approx. **$300,000.**

Ga., Macon—OFFICE—Southern Bell Telephone Co., Hurt Bldg., Atlanta, dial and toll office, **$400,000.**

Idaho, Nampa — HOSPITAL — Nazarene Church, Nampa, plans by Roald, Schmeer & Harrington, Spalding Bldg., Portland, Ore., 4 story, 45x165 ft. rein.-con. Samaritan Hospital addn. Approx. **$250,000.**

Idaho, Twin Falls—HOUSING—Magic Valley Investment Co., 152 Main Ave., N., 70 houses, **$660,000.**

●**Ill., Chicago**—BUILDING—Medical Center Y. M. C. A., 1804 W. Congress St., Zone 12, Y. M. C. A. Bldg., Damen, Polk and Wichester Sts., in Westside Medical Center, **$1,250,000.**

Ind., Wabash — HOMES — National Homes Co., Lafayette, approx. 50 pre-fab houses on site of old golf course. Approx. **$300,000.**

Ia., Marshall—DORMITORY—Marshall Co. Realty Co., 69 McAlpin Ave., Edgewater, thirty-five 1 story, basmt., brick residences, incl. garages. **$367,500.**

●**Ky., Louisville**—HOSPITAL—Louisville Conference of the Methodist Church, Frank H. Gregg, exec. dir., 1115 S. Fourth St., plans by Nevin, Harrison & Morgan, Starks Bldg., hospital, **$3,875,000.** E. R. Ronald & Assoc., Heyburn Bldg., engrs. CD 12/9/47.

●**Me., Lewiston**—BANK—Manufacturers National Bank, Main St., plans by Cram & Ferguson, 248 Boylston St., Boston, Mass., brick, steel bank. **$1,000,000.**

Md., Baltimore — RESIDENCES — Property Sales Corp., 900 Court Square Bldg., plans by Kenneth C. Miller, 2203 N. Charles St., Zone 18, forty-three 19x32 ft., brick residences, **$300,000.**

Md., Dundalk—HOUSING—Willow Heights, Inc., Edw. W. Pugh, 62 Dundalk Ave., plans by Wm. Everett Gray, 12 E. Pleasant St., Baltimore, Zone 2, one hundred fifty 2 story, basmnt., 16x29 ft., row type residences, **$900,-000.**

Mass., Belmont — SCHOOL — St. Joseph's Parish, Rev. F. V. Cummings, pastor, 345 Waverly St., Belmont, plans by Whelan & Westman, 7 Water St., Boston, 3 story, basmt., brick parochial school, Common St. at Orchard St. Approx. **$250,000.**

●**Mich., Detroit**—MUSEUM—Detroit Historical Society, Woodward and Kirley Sts., plans by Wm. E. Kapp, 1842 Buhl Bldg., stone, concrete, steel museum, incl. planetarium and international institute. **$2,000,000.** CD 12/48.

Mo., St. Louis — REHABILITATION CENTER—Washington University, A. H. Compton, chancellor, Lindell and Skinker Blvds., Zone 5, plans by Jamieson & Spears, 1696 Arcade Bldg., 812 Olive St., Zone 1, 2 and 4 story, structural floor rehabilitation center for Washington University Medical School Group, Audubon and Euclid Aves. **$500,000.** CD 5/2

Neb., Lincoln—CHILDRENS HOME—Synod of the American Lutheran Church, Sterling, plans by Davis & Wilson, 225 Stuart Bldg., Children's home, 52 and LaSalle Sts. **$250,000.**

●**N. Y., Jackson Heights**—APARTMENT—Ed Donner Gardens, Inc., c/o Philip Birnbaum, archt., 303 W. 42 St., New York, Zone 18, 6 story apartment, in area bounded by 81 St., 34 Ave. 82 St., and Northern Blvd. **$1,250,000.**

N. Y., New York — APARTMENT — Olof Corp., 2488 Grand Concourse, Zone 58, plans by E. Herbert Lill, 1501 W. 72 St., 6 story 23, 6 story apartment, 201 St. and Perry Ave. **$400,000.**

●**O., Cincinnati** — APARTMENTS — Cincinnati Community Development Co., L. Tucker, mgr., 2513 Turner Ave., plans by Potter, Tyler & Martin, Reakirk Bldg., 128 E. 6 St., 33 two story, basmt., brick apartments. **$2,000,000.**

●**O., Cincinnati**—OFFICE, etc.—The Cincinnati Gas & Electric Co., 4 and Main Sts., plans by Harry Burns, engr. and archt., 4 and Plum Sts., 5 story, basmt., steel, brick, concrete office, service bldg., warehouse and garage. $2 000,000.

●**O., Cincinnati**—HOSPITAL—Deaconess Hospital, Clifton and Straight Sts., 3 story, basmt., 300 bed brick hospital addn. **$1,000,000.**

O., Cincinnati—APARTMENT — Dr. Kenneth B. Hanson, Union Central Bldg., plans by Robert B. Schildknecht, Mills Bldg., 31 E. 4 St., 3 story, basmt., 102x239 ft. brick, L. shaped 49 family apartment, and parking area. **$300,000-$350,000.**

O., Euclid—STORE—Epstein Constr. Co., 765 Lakeview St., Cleveland, plans by Weinberg, Laurie & Teare, 1227 Schofield Bldg., Cleveland, 1 story basmt., 200x650 ft., 16-unit brick, stone store, and 525-car parking area. **$600,000.**

●**O., Euclid** — APARTMENT — Greenwood Acres, c/o Harry A. Sharpe, archt., 12336 Forest Grove, Cleveland, 138 suite apartment, Lakeshore Blvd. at E. 246 St. **$1,100,000.**

O., Euclid — CHURCH, etc. — Holy Cross Parish, c/o Bishop Haban, 815 Superior Ave., Cleveland, plans by James J. Collins, 714 Swetland Bldg., Cleveland, church and convent, E. 260 St. and Lakeshore Blvd. **$350,000.**

O., Hamilton—CHURCH—Grace Methodist Church, Rev. A. W. Almgren, pastor, 320 E. Front St., plans completed by Folsberg & Gillespie, Ingalls Bldg., Cincinnati, 1 and 2 story, basmt., brick church. **$750,000.**

O., Lakewood—EDUCATIONAL—Lakewood Methodist Church, Detroit and Summitt Ave., educational bldg. addn., office enlarged, etc. **$350,000.**

Okla., Norman—HOTEL—W. L. Lockett, 910 Elm St., plans by Louis Williams, 2333 N. W. 18 St., Oklahoma City 5, story basmt. hotel. **$300,000.**

Okla., Oklahoma City — Medical — Baiyeat Clinic, 1209 N. Walker St., plans by Bailey & Bezzils, 1216 Colcord Bldg., 3 story, part basmt., 115x117 ft., steel, brick, stone medical bldg., air-conditioning, etc. **$700,000.**

Pa., Altoona—DEPARTMENT STORE—Wm. F. Gable Co., 1318 11 Ave., plans by Shollar & Shollar, 2000 Maple Ave., 6 story, 78x92 ft., brick, steel, steel department store addn. **$250,000.**

Pa., Harrisburg — SHOPPING CENTER — J. W. Kline, 210 Walnut St., plans by H. E. Starr, 410 N. 2 St., 50,000 sq. ft. shopping center, east of John Harris High School, on 25 St.

●**Pa., Phila.**—APARTMENT—Corporation, c/o Fabel, Inc., 253 S. 9 St., apartment, 21 and Chestnut Sts. Approx. **$2,500,000.**

Pa., Phila. — SYNAGOGUE — Germantown Jewish Community Center, Lincoln Dr. and Ellett St., plans by Harry Sternfield, 1411 Walnut St., synagogue. Approx. **$250,000.**

Tenn., Memphis—SCHOOL—Temple Israel, c/o Furbringer & Ehrman, archt., Union Planters Natl. Bank and Trust Co. Bldg., religious school. **$300,000.** CD 1/28/48.

●**Tenn., Nashville**—STORE—Cain-Sloan Co., 5 and Church Sts., plans by Marr & Holman, Stahlman Bldg., department store. **$5,000,000.** CD 5/27.

Tex., Abilene — RESIDENCES — Dream Homes, Inc., c/o R. Thomason, Sr., Abilene, 100 frame residences, concrete fdn. **$700,000.**

Tex., Dallas — DORMITORY — Southern Methodist University, Dallas, plans by Mark Lemmon, 1210½ Main St., masonry dormitory, **$450,000.**

●**Tex., El Paso**—HOSPITAL—Hotel Dieu, c/o Sister Mathilde, El Paso, plans by Maguolo & Quick and Percy McGhee, 1013 First Natl. Bank Bldg., 4 story, 208 bed masonry hospital addn **$2,200,000.**

Tex., Fort Worth—RESIDENCES—Wm. C. Carter, 3541 Stadium Dr., 75 one story brick, stone residences, concrete fdn., in Bluebonnet Hills addn. on Parkridge Blvd. and University Dr. south. **$750,000.**

Tex., Houston—HOUSING—R. E. Baldwin, 1015 W. Gray St., frame housing, concrete slab fdn., off Wynona St., etc. **$250,000.**

●**Tex., Houston**—DWELLINGS—L. E. Helms Lumber Co., 5214 Airline St., 150 dwellings, vicinity McCarthy proposed Airport site, **$1,-200,000**; 100 dwellings, off Old Richmond Rd., **$700,000**; 65 dwellings, Helms Pl., **$475,000**; 99 dwellings, Stannard Pl., **$750,000.**

Tex., Houston—HOUSING—J. E. Hoover, 9149 Elizabeth Rd., housing, Shadowwood Lane, Briar Oaks, Ascot Lane. **$350,000.**

●**Tex., Houston**—APARTMENT—Max Krauss, 2nd Natl. Bank Bldg., plans by Joseph B. Reynolds, 2518 Times St., 450 Negro apartment units, in area of N. Shepherd, White Oak Bayou, M. K. T. Ry. and Patterson St. **$2,700,-000.**

Tex., Houston—HOUSING—H. L. Lockhart, 802 LaMonte Lane, brick veneer housing, concrete slab fdn. **$250,000.**

●**Tex., Houston**—DWELLINGS—Mac Gregor Park Homes, Inc., c/o J. E. Leicher, 2402 Arbor St., Sect. 2, 150 dwellings, Mac Gregor Place subdivision, **$1,100,000**; Sect. 3, 214 dwellings, 1st sect. of MacGregor Place subdivision, **$1,498,000.**

Tex., Houston—DWELLINGS—H. H. Merrill, 403 Coronado St., 75 dwellings, north of Bellaire Circle. **$525,000.**

Tex., Houston — DWELLINGS — Olson Bros. Constr. c/o, 2441 Times St., 50 additional dwellings, off Hy. 75, near Milby Park. **$500,000.**

Tex., Houston—CHURCH—Park Place Baptist church, 3827 Broadway, plans by Jackson & Dill, 1837 Kipling St., (1st unit) church. **$300,000.** CD 6/30

Tex., Houston—HOUSING—Frank W. Sharp, 2202 Rossiyn St., housing in area east of Wesleyan Addn. **$750,000.**

●**Tex., Houston** — APARTMENT — Melvin A. Silverman, 8116 Alameda St., 190 Negro apartment units, south of Market St., etc. **$1,140,000.** Still, Wildman & Crockett, 3500 Alameda St., prel. engrs.

Tex., Houston—CHURCH—Trinity Lutheran Church, 12 Reiser St., plans by Theodore Steinmeyer, 714 Kirdwood Rd., St. Louis, Mo., masonry church. **$450,000.**

Tex., Houston—DWELLINGS—L. R. Webb Constr. Co., 8250 Glenbrook Dr., 14 permanent type dwellings, between San Felipe Rd. and Memorial Dr. **$350,000**; housing, Huisache area. **$300,000.**

Tex., McAllen—CLUB—Women's Club, c/o Mrs. Orville L. Cox, pres., McAllen, plans by Zeb Rike, Nelson Bldg., masonry, semi-colonial type club, concrete pier and beam fdn. **$300,000.**

Tex., San Antonio—SHOPPING CENTER—H. E. Butt Grocery Co., Robstown Rd., Corpus Christi, shopping center, off Patterson Ave., Alamo Heights. Approx. **$350,000.**

Tex., San Antonio — DWELLINGS — Wm. Ochse & Assoc., Alamo Natl. Bldg., 30 frame dwellings, concrete fdns., Monte Vista area. **$275,000.**

Tex., San Antonio — SCHOOL — St. Ann's Church, Fredericksburg Rd. and French Pl., plans by Julian & White, Transit Tower, 3 story 28,000 sq. ft. masonry school. **$250,000.** Frank T. Drought, 117 W. Pecan St., and M. E. Staley, No. 3 Chandler Bldg., engrs.

●**Tex., Snyder**—OFFICE, etc.—Park Terrace Plaza, Snyder, plans by Hank Avery, Snyder, and J. R. Pierce, assoc. archt., Snyder, 9 story (ultimately 12 story) bsmnt., 110,000 sq. ft. concrete, steel office and hotel, concrete pier and beam fdn., 4 blocks west of Square. **$2,500,000.**

●**Tex., Snyder**—DUPLEXES, etc.—Snyder Homes, Inc., Snyder, plans by Allen Yates, Abilene, 50 duplexes, **$1,500,000**; 100 frame dwellings, concrete slab fdns., **$1,100,000.**

NON-STOP PROFITS

PUT A *SANSTORM* ON THE JOB

Your sandblasting headaches end WHEN SANSTORM GOES ON YOUR CONSTRUCTION JOB! Fast and easy, your Sanstorm Sandblast Machine will clean every kind of steel fabrication, concrete, brick, stucco and equipment. You'll say it's the greatest money-saving piece of machinery on your job.

CHECK THESE FEATURES

✔ **JOB EFFICIENCY.** No wonder Sanstorm is the leader because no matter what abrasive you use, it won't plug.

✔ **JOB ECONOMY.** Simply designed, Sanstorm machines are built for rugged working conditions, yet always maintain a constant, precision flow.

✔ **SIZES FOR EVERY BLAST CLEANING NEED.** Sanstorm Sandblasting machines are available in stationary or portable models. Simply operated, too, for real labor savings.

Dealers in all principal cities.
For further information write or wire:

Charles G. Spears,
SANSTORM MANUFACTURING CO.
Santa Clara and H Streets Fresno, California

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and All Heavy Structures

Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.
Scranton, Pa. Dept. E, U. S. A.

BAILEY METERS AND CONTROLLERS

FOR SEWAGE TREATMENT AND WATER SUPPLY . . .

● Venturi Tubes, Weirs, Flumes, Nozzles and other primary elements; Mechanically and Electrically operated Registers and Complete Automatic Control Systems.

BAILEY METER COMPANY
1029 IVANHOE ROAD • CLEVELAND, O.
Bailey Meter Co. Ltd., Montreal, Canada

New 2" aluminum pump weighs 105 lbs., pumps 9000 gph . . . Gives high head performance for price of low head pump.

JAEGER PUMPS make wet jobs dry

Extra power and double priming action to dewater faster. Built to outlast cheaper pumps by thousands of hours.

Heavy duty 2" to 10" models for low or high head requirements. Super-Jet pumps for pressures to 275 lbs. Diaphragm and caisson pumps. Get catalog.

THE JAEGER MACHINE COMPANY
Columbus 16, Ohio

Specify KORK-PAK Joint Filler for use between floor slabs and footings in basementless houses and structures on grade and get the extra KORK-PAK insulating feature as well as a waterproof, resilient, non-extruding filler that will keep the joint effectively filled at all times.

KORK-PAK is composed of cork granules bonded together with asphalt between two sheets of asphalt-saturated paper—it's waterproof and insect proof to assure positive joint filling for the life of the building.

KORK-PAK is the least expensive non-extruding joint filler made—low cost, coupled with its high insulation coefficient makes KORK-PAK the ideal joint filler for any type of construction.

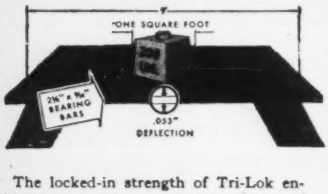
SERVICISED QUALITY PRODUCTS 1920

Write for complete details on KORK-PAK. See our Catalog in SWEET'S.

SERVICISED PRODUCTS CORP.
6051 W. 65th ST., CHICAGO 38, ILL.

For **STRENGTH** specify

TRI-LOK
RECTANGULAR
OPEN STEEL FLOORING



The locked-in strength of Tri-Lok enables it to stand up under heavy loads—even on long spans. No rivets, bolts, or welds are used in the construction of Tri-Lok; this feature eliminates the possibility of loose joints.

Tri-Lok is also available in Diagonal, or Super-Safety U-type Flooring, and in Stair Treads of all types. Write for Bulletin KK 1140.

DRAVO CORPORATION

National Distributor for the Tri-Lok Company

Dravo Bldg., Pittsburgh 22, Pa.

Sales Representatives in Principal Cities

DRAVO

Tex., Sweetwater—DWELLINGS—L. L. McCandless, W. 8 St., Austin, 3 frame dwellings, concrete slab fdns. **$275,000.**

Tex., Sweetwater—HOUSING—White & Gunn, Stephenville, frame housing, concrete post and slab fdns., Hillcrest addn. **$250,000.**

Tex., Tyler—DWELLINGS—Guinn & Valwin, 1325 San Antonio St., 20 dwellings. **$260,000.**

●**Wash., Ephrata**—HOUSES—Century Constr. Co., Ephrata, 8 apartments. **$1,128,000.**

Wash., Chehalis—HOSPITAL—Convent of St. Rose, Everett, plans by J. W. Maloney, Central Bldg., Seattle, Zone 4, St. Helen's Hospital addn. **$364,170.** CD 10/11.

●**Wash., Moses Lake** — DWELLING — I. E. Baldwin, Inc., 1109 N. 36 St., Seattle, Zone 3, project abandoned 325 family dwelling units at Air Force Base. **$3,250,000.** CD 9/16.

Wash., Richland—CLUB HOUSE—American Legion, Richland, club house. **$250,000.**

Man., Winnipeg—COMMUNITY CENTER—Young Men's Hebrew Assn., 91 Albert St., plans by Green, Blankstein, Russell & Assoc., 310 Times Bldg., Winnipeg, community center, Hargrove and Qu.' Appielle Sts. Approx. **$500,000.** CD 3/7/47.

N. S., Kentville—OFFICE, etc.—F. W. Robinson, Ltd., 374 Main St., office and apartment. Approx. **$250,000.**

Que., Quebec City — CLUB — Association of Civil Employees of Province of Quebec, c/o Louis Normand, pres. of Quebec City Sect., City Hall, plans by Maurice Mainguy, 565 St. John St., 5 story club, Laurier Ave. **$500,000.**

Que., Rigaud—WING—Rev. Clercs de St. Viateur, 1145 St. Viateur Ave. W., Montreal, plans by J. M. Lafleur, 44 Ste. Cecile St., Valleyfield, Michaud Wing at Rigaud College, Approx. **$750,000.**

INDUSTRIAL BUILDINGS

Calif., Burbank—PLANT—Lockheed Aircraft Corp., 2555 N. Hollywood Way, 1 story, 135x240 ft., steel aircraft fabrication plant. **$500,000.** P. M. Varravetto, plant engr.

Ky., Covington — FACTORY, etc. — Liebel-Flarsheim Co., 303 W. 3 St., Cincinnati, O., plans by W. Carlton & Assoc., 15 E. 9 St., Cincinnati, O., 1 story brick factory, office and shop. **$500,000.** CD 1/16/48.

N. Y., Long Island City—REPAIR SHOP—Queenshop Corp., c/o David Levy, archt., 70 E. 45 St., New York, Zone 17, 1 story, 189x250 ft. motor vehicle repair shop, 21 St. between Hunts Point and 50 Aves. **$170,700.**

N. Y., Massapth—FACTORY—Globe International, Inc., c/o David Levy, archt., 70 E. 45 St., New York, Zone 17, 2 story, 294x606 ft. factory, Flushing Ave., Cypress Ave. **$680,000.**

N. D., Casselton—STANDBY PLANT—Otter Tail Power Co., Casselton, building and new equip. for standby plant. **$173,000.**

●**O., Cincinnati**—FACTORY—Ford Motor Co., Dearborn, Mich., 1 and 2 story, 520x820 ft. factory, power plant railroad siding, parking area. Approx. **$4,000,000.** George H. Miehls, engr., and Frederic A. Fairbrother, archt., both New Center Bldg., Detroit, Mich. CD 11/29.

Okla., Okarche — GRAIN ELEVATOR — Farmers Co-operative Assn., Okarche, 250,000 bu. grain elevator. **$110,000.**

Okla., Weatherford—GRAIN ELEVATOR—Farmers Co-operative Assn., Weatherford, 250,000 bu. grain elevator. **$100,000.**

Tex., Dallas—WAREHOUSE—Ralph Lofland, 3219 Maple St., addn., 1 frame, brick stone warehouse, concrete slab fdn. and frame, Harry Hines Blvd. and Lofland St. **$100,000.** Smith & Mills, Mercantile Bank Bldg., consult. engrs.

Tex., Dallas—PLANT—Trinity Portland Cement Co., Republic Bank Bldg., addnl. cement plant expansion, incl. rein.-con. fdns. for new equip. **$300,000.** CD 7/31/46.

Tex., Houston—WAREHOUSE—The Air Rectifying & Eng. Co., 7710 Wallisville Rd., warehouse. **$100,000.**

●**Tex., Orange** — PIPE MILL — Consolidated Western Steel Corp., c/o U. S. Corp., 2087 E. Slauson Sts., Los Angeles, Calif., pipe mill. **$3,750,000;** site preparation, dirt work, concrete fdns. for pipe mill, drainage, roads and area paving. **$650,000;** WW., sanitary and storm sewerage sys., gas sys., electric lighting sys. **$300,000.** CD 5/7/47.

●**Tex., Tyler**—REFINERY—McMurrey Refining Co., Tyler, fluid catalytic cracking refinery. **$1,500,000.** Universal Oil Products Co., 310 S. Michigan St., Chicago, Ill., consult. engrs.

Washington—FERRY TERMINALS—Puget Sound Navigation Co., Colman Dock, Seattle, Zone 1, two ferry terminals at Lofall and South Point, Approx. **$100,000** each.

●**Alta., Edmonton** — REFINERY — British American Oil Co., Ltd., 10622 Jasper Ave., oil refinery, 4 mi. east of here. Approx. **$1,000,000.**

Alta., Hanna—PLANT—Hanna Petroleums Ltd., Hanna, natural gas and by-products plant. **$150,000.**

Alta., Ogden — REFINERY — Supreme Refineries, Ltd., Ogden oil refinery. **$300,000.**

Ont., Brantford—PLANT—FitzJohn Coach Co., Inc., A. M. Port, secy., Muskegon, Mich., U. S. A., remodeling plant. **$300,000.**

Ont., Toronto—PLANT A.—Hunt's Ltd., 67 Walker St., plans by Parrott, Tambling & Witmer, 57 Bloor St. W., plant addn. Approx. **$150,000.**

●**Ont., Toronto**—FACTORY—C. C. Wakefield & Co., Ltd., 67 Young St., factory in Long Brank Dist. Approx. **$1,500,000.**

Ont., Wallaceburg—PLANT—Canada & Dominion Sugar Co., Ltd., 7 Wallace St., remodeling plant. **$150,000.** CD 8/1/45.

●**Sask., Saskatoon**—REFINERY—Hi-Way Refineries Ltd., Saskatoon, oil refinery addn. **$1,000,000.**

UNCLASSIFIED

†**D. C., Wash.**—AMPHITHEATER—National Capitol Parks, Interior Dpt., Interior Bldg., plans by William M. Haussmann, c/o owner, amphitheater, incl. 30x63 ft. stage, sanitation facilities, and lighting fixtures, in connection with Sesquicentennial Celebration of City, in Rock Creek Park near Colorado Ave. and 16 St. N.W. **$300,000.** P. E. Smith, ch. engr.

Fla., Tampa—TELEVISION STATION—WDAE & Tampa Times, Inc., c/o W. O. Sparkin, Tampa, radio television station. Approx. **$100,000.** CD 5/6/48.

Idaho, Burley—SWIMMING POOL—City, City Hall, defeated bonds swimming pool and bathhouse. **$100,000.** CD 3/30.

Ill., Pana—DRIVE-IN THEATRE—Tanner Drive-In Theatres, c/o Harry Tanner, Roseland Theatre, 500-car drive-in theatre, in or near here. **$100,000.**

Ill., Vandalia—DRIVE-IN THEATRE—Tanner Drive-In Theatres, c/o Harry Tanner, Roseland Theatre, 500-car drive-in theatre, in or near here. **$100,000.**

Ind., Greendale—SWIMMING POOL—Village, Geo. Burris, utilities supt., plans by Jos. Stith, 561 Ready Rd., Cincinnati, O., 50x120 ft., rein.-con. swimming pool, and 33x80 ft., concrete block bath house with rein.-con. floors. **$100,000.** Wayne A. Hecker, 1206 Mercantile Library Bldg., Cincinnati, O., engr.

Ind., Muncie—DRIVE-IN THEATRE—Y. & W. Management Corp. and Muncie Theater Realty Co., 642 Illinois Bldg., Indianapolis, 700-car California-type drive-in motion picture theatre, incl. screen tower, projection booth, concession stand, walks, ramps, drive near junction of State Hys. 3 and 67, north of city. **$125,000.**

Kansas—RURAL DISTRIBUTION LINES—Victory Electric Co-operative, Hutchinson, c. rural distr. lines, Sect. F, in Ford Co. **$200,000.** Frank Horton & Co., Lamar, consult. engrs.

Kentucky—RURAL DISTRIBUTION LINES—Inter-County Rural Electric Co-operative Corp., Danville, 125 mi. rural dist. lines, headquarters facilities, sys. imprvs., Boyle Co. **$140,000.**

Minnesota—RURAL DISTRIBUTION LINES—Blue Earth-Nicollet Co-operative Electric Assoc., Mankato, 148 mi. rural distr. lines and sys. imprvs., Blue Earth Co. **$495,000.** CD 10/28.

Minnesota — RURAL DISTRIBUTION LINES—Crow Wing Co-operative Power & Light Co., Brainerd, 383 mi. rural dist. lines and sys. imprvs. **$800,000.**

Minnesota—RURAL DISTRIBUTION LINES—Lyon-Lincoln Electric Co-operative, Inc., Tyler, 174 mi. rural distr. lines and sys. imprvs., Lincoln Co. **$290,000.**

Minnesota—RURAL DISTRIBUTION LINES—Steele-Waseca Co-operative Electric Co., Owatonna, 50 mi. rural distr. lines and sys. imprvs., Waseca Co. **$265,000.**

●**Mississippi** — RURAL DISTRIBUTION LINES—East Mississippi Electric Power Assoc., Meridian, 467 mi. rural dist. lines and sys. imprvs., Clarke and Lauderdale Counties. **$1,320,000.**

●**Missouri**—RURAL DISTRIBUTION LINES—Central Electric Power Co-operative, Linn. rural dist. lines, Howard, Miller, Jefferson, Howell, Audrain, Camden, Dent, Cole, Washington, Oregon, Monroe, Maries, Wright, Randolph, Gasconade, Laclede, Douglas, Montgomery, Phelps, Chariton, Osage, Dallas, Ozark, Pike, Pulaski and Texas Counties, and steam power generating plant in Jefferson City. **$11,350,000.**

●**Missouri**—RURAL DISTRIBUTION LINES—Sho-Me Power Corp., Marshfield, 371 mi. transmission lines, Texas, Howell, Wright, Douglas, Ozark, Webster, Laclede, Camden, Pulaski, Maries, Phelps, Crawford, and Franklin Counties. **$2,000,000.** CD 3/30.

O., Middletown—STADIUM, etc.—Bd. Educ., R. H. Snyder, clk., 1st Natl. Bank Bldg., voted bonds, concrete or steel, 8,000 seating capacity stadium, and lighting sys. **$225,000.** Carl H. Martin, 25 Santa Fe Rd., archt.

Tenn., Memphis—STOCK ARENA, etc.—City Park Comn., 1461 Court Ave., plans by George Awsumb, Falls Bldg., stock arena and woman's bldg. at fairgrounds. **$300,000.**

Tex., Houston—STADIUM—University of Huston, 2705 Fannin St., stadium expans. **$1,250,000.**

Tex., Lubbock—SWIMMING POOL—City, rein.-con. swimming pool. **$100,000.**

Va., Roanoke—GOLF COURSE, etc.—Hidden Valley Country Club, Joseph Stone, pres., 2515 Carlton Rd., plans by E. Paul Hayes, 124 W. Church Ave., Dick Wilson, golf archt., Del Ray Beach, Fla., golf course and country club. **$100,000.** Mattern & Mattern, 118 Campbell St., engrs.

Ont., New Toronto—ARENA—Lakeshore Lions Club, Dr. C. O. Lemox, chn. rink comm., memorial arena, Bermingham St. Approx. **$350,000.** Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs.

CONSTRUCTION REPORTS—Second Section

WATER SUPPLY

BIDS ASKED

December 21

La., Marrero—Parish Water Works Dist. 3, Marrero, water distr. sys. exten. Plans deposit $15. S. N. Applewhite, 424 Miliandon St., New Orleans, engr.

December 22

Mich., Detroit—City Bd. Water Comrs., Water Bd. Bldg., 735 Randolph St., Zone 26, Contr. Sections 2, 5, 4, 5 of Northeast Tunnel, 20,773 ft., Contr. DWS-29 A, B, C, D. Plans deposit $25; adv. ENR 12/8. CD 11/11/48.

Tex., Fort Worth—City, W. O. Jones, mgr., Fort Worth, intake addn. facilities at Lake Worth. $150,000. Plans deposit $15. Joe J. Rady, 811 Insurance Bldg., engr. CD 8/31/44.

December 23

O., Alliance—William G. Neff, dir. Public Safety & Service, City Hall, WW imprvs., electrification main pumping station Contr. 11, general constr.; Contr. 12, heating; Contr. 13, electrical work. Plans deposit $20. The Chester Engineers, 210 East Park Way, Pittsburgh, 12, Pa., engrs.

LOW BIDDERS

Ind., Warsaw — Northern Indiana Public Service Co., 500 Broadway, Gary, rejected bids Oct. 31, water filtration plant remodeling. CD 10/19.

Mass., Boston—Commonwealth of Mass., Metropolitan Dist., 20 Somerset St., Nov. 22, 9,100 ft. pressure pipeline, appurtenances, Contr. 184, from Continental Constr. Co., 6 Pleasant St., Malden. **$169,781.**

O., Conneaut—City, City Hall, water distr. sys., from Chicago Bridge & Iron Co., Guild Bldg., Cleveland. **$150,000.** Havens & Emerson, 1140 Leader Bldg., Cleveland, consult. engrs. Wm. Kantola, city engr. CD 12/17/43.

Tex., Marble Falls—City, rejected bids Nov. 22, treatment plant, L. B. **$59,663*****distr. sys., L. B. **$18,852*****steel tank and tower, L. B. **$33,290.** The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, engrs.

Tex., Pecos—City, Nov. 22, WW, one 125,000 gal. steel ground storage tank, 53,650 lin. ft., 18- to 24-in. supply line, 2,660 lin. ft. collection lines, from Enix Constr. Co., Pecos. **$373,224.** Est. $375,000. CD 11/11.

B. C., Saanich—Municipality, Municipal Hall, Nov. 22, 7 m.g. rein.-con. reservoir, from Dawson & Hall Ltd., 775 Clark Dr., Vancouver. **$99,961.** CD 11/16.

CONTRACTS AWARDED

Ia., Spirit Lake—City, WW imprvs., to R. V. Leury Co., Security Bldg., Des Moines. **$181,-000.** Bids 11/7. CD 10/11.

Neb., Lincoln—City, City Hall, water treatment plant, at Ashland, to Olson Constr. Co., 410 S. 7 St. **$211,161.** Bids 11/16. CD 11/1.

O., Cincinnati—City, City Hall, 9 and Plum Sts., WW imprv., fdns. for 2 storage tanks, excav., etc., to H. & F. Hosea, 626 Broadway. **$475,700.** Est. **$476,000.** Bids 10/19. CD 10/13.

Pa., Philа.—Dpt. P. Wks., City Hall Annex, Oak Lane Reservoir, Proj. 440-WWE, chlorine house valve chambers structure, to McElwee Courbis Constr. Co., 59 Madison Ave., Erlton, N. J., **$116,926.** Elbert J. Taylor, Water Bureau Chief. CD 3 11/46.

Pa., Philа.—Dpt. P. Wks., City Hall Annex, Schedule 456 WWE, watermains, Newton Ave. and other locations, to M. & J. R. McHugh, 892 N. Markoe St., **$119,493.** Schedule 450 WWE, Tolbutt St., and various locations, to Armour Excavating Co., Broad St. Station Bldg., **$199,036.** Bids 11/30. CD 11/23.

Pa., Philа.—Dpt. P. Wks., City Hall Annex, watermains, Pennsylvania Ave. Proj. 452-WWE, to Oxford Constr. Co., 16 S. Broad St., **$111,218.** Bids 11/18. CD 11/23, under LB.

Wash., Seattle—City, County-City Bldg., Zone 4, 18,000 ft. 30 and 42 in. steel or concrete watermain from Maple Leaf reservoir to N. 125 St. and Aurora Ave., to Valley Constr. Co., 7708 Rainier Ave. **$306,069.** Est. $359,863. Bids 11/30. CD 11/23.

SEWERS, WASTE DISPOSAL

BIDS ASKED

December 22

Wash., Spokane—City, City Hall, Div. F, the Chestnut St. section of intercepting sewer project, $536,740. Plans deposit $10, C. E. Davis, city engr. CD 11/4.

December 29

Calif., Oakland—East Bay Municipal Utility Dist., 512 16 St., Sections 5 and 6 of South Interceptor Sewer, Spec. SD-42, incl. 22,300 ft. (1), 84, 96 and 108 in. or (2) 78, 84 and 87 in. precast reinforced or cast in place monolithic concrete sewer pipe. Plans deposit $10. John Longwell, ch. engr. CD 11/13/46.

Tex., Galveston—City, c/o Marshall McNeil, Jr., Sewer Comm., Galveston. East End Flats sanitary sewer lines. $65,000. Plans deposit $10. Jos J. Rady, 811 Insurance Bldg., Fort Worth, engr. CD 6/16/47.

SOON LETS CONTRACT

Calif., Whittier—Phoenix Constr. Co., 642 S. Wentworth Ave., Los Angeles, soon lets contract sanitary sewers and street imprvs. in Tract 15885, $160,000, Kemmerer Eng. Corp., Whittier, engrs.

LOW BIDDERS

Calif., Turlock — City, City Hall, rejected bids Nov. 1, industrial waste disposal project, Schedule I, L. B. **$92,214** and Schedule II, L. B. **$90,590.** Schedule III **$90,140.** CD 10/3.

Md., Baltimore—City, City Hall, Nov. 30, approx. 13,400 lin. ft. 24-to 36-in. c.i. sewers, Contr. 381, from Frank Angelozzi Constr. Co., 123 S. High St., **$575,778;** approx. 2,330 lin. ft. c.i. sewer, 2,650 lin. ft. 27-to 30-in. vitr. clay pipe, etc., Contr. 382, from Camillo Iacobucci, 507 Walker Ave. **$109,970.** CD 11/23.

O., Ashtabula—City, storm sewer in northwest sect., from Homer Merritt Co., Lorain, **$128,724.** Est. $157,925. Fred Collins, c/o owner, city engr. CD 12/10/43.

Ore., Portland—City, City Hall, Nov. 22, 4 sewage pumping stations, from Packard Pipe & Pump Co., Clark Hotel, Vancouver, Wash. **$158,000.** CD 11/1.

Ore., Portland—City, City Hall, Nov. 25, construct S. E. 82 and Cora St. sewerage sys., from Empire Constr. Co., 4506 S. E. 39 St., **$193,619.** Ben S. Morrow, c/o owner, city engr.

Pa., Philа.—Dpt. P. Wks., City Hall Annex, Nov. 14, sewers in Cheltenham Ave., 5 and Independence Sts., from A. Di Sandro, 937 Unruh St., **$231,624.** CD 11/2.

Tex., Houston—City, City Hall, 900 Brazos St., Nov. 29, storm sewers, Hays St. from Viking Constr. Co., 3901 Drew St., **$127,153** est. $177,000; storm sewers, Greenbrier and Kingsdom Sts., from John Heffernan, Jr., 3300 Old Spanish Trail Rd., **$58,890** est. $76,000. CD 11/16.

Wash., Mount Vernon—City, City Hall, Nov. 23, 53,410 ft. 8-to 30-in. sewers, Sect. 3, from Thorpburn & Lord Inc., 126 Lake S. W., Seattle, **$82,113*****Sect. 2, from Valley Constr. Co., 7708 Rainier Ave., Seattle, **$77,549*****Sect. 1, 4 and 8, from Blake-Thompson Constr. Co., Mount Vernon **$60,391.** CD 11/1.

CONTRACTS AWARDED

Ala., Childersburg — City, sanitary sewer imprvs., to E. N. Murray, Buena Vista, Ga., **$118,107.** Bids 11/23.

Minn., Moorhead—City, P. A. Cook, clk., waste treatment plant imprvs. Sect. 3, to Phelps-Drake Co., 1415 S. E. 8 St., Minneapolis, **$122,222;** addns. to and remodeling sewage pumping stations, Sect. 2, to Barnes-Mattison, Inc., 1230 Metropolitan Life Bldg., Minneapolis, Approx. **$56,000.** Bids 11/7. CD 11/23, under LB.

N. C., Charlotte—City, City Hall, New Sugar Creek Outfall Sewer, to Rea Constr. Co., Pineville Rd., **$296,451.** Bids 11/17. CD 11/1.

Wash., Union Gap—City, City Hall, sewage disposal plant, to Rushlight Automatic Sprinkler Co., 55 S. E. Farragut St., Portland, Ore., **$151,336;** sewer lines, to R. L. Moss, Zenith, **$195,380.** CD 5/26.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

December 20	**December 22**
Iowa	**Maryland**
Ohio	
December 21	**December 28**
Pennsylvania	**New York**

LOW BIDDERS

●**Illinois**—State Div. Hy., Springfield, Dec. 2, substructure, concrete floor, erect structural steel for 2 grade separations and 0.44 mi. concrete paving approaches to grade separation on Rte. 99, Cook Co., from Standard Paving Co., 39 N. La Salle St., Chicago, Zone 2, **$247,010** and **$171,517** respectively*** furnishing structural steel on same 2 jobs, from American Bridge Co., 208 S. La Salle St., Chicago, Zone 2, **$91,513*****0.23 mi. concrete paving approaches to grade separation, Rte. 99, Cook Co., from Robert A. Black, Inc., 5 E. Erie St., Chicago, Zone 11, **$125,610** ***substructure, erect structural steel, for railroad overhead over Indiana Harbor Belt R. R., Cook Co., and substructure, erect structural steel for railroad overhead over Michigan Central R. R., Rte. 122, Cook Co., from L. B. Stranderg & Son, Inc., 608 S. Dearborn St., Chicago, Zone 5, **$314,188** and **$268,869** respectively***furnishing structural steel for same project from American Bridge Co., 208 S. LaSalle St., Chicago, Zone 4, **$92,329** and **$54,413** respectively***0.21 mi. concrete paving grade separation approaches, on Rte. 99, Cook Co., from Milburn Bro's., Inc., 704 Central Rd., Mt. Prospect, **$112,935** ***substructure for 2 parallel bridges on Rte. 122, Cook Co., from Great Lakes Dredge & Dock Co., 122 S. Michigan Ave., Chicago, Zone 3, **$597,748*****furnishing structural and cast steel and erecting structural and cast steel, for same project, from American Bridge Co., 208 S. LaSalle St., Chicago, Zone 4, **$345,335** and **$361,549** respectively***substructure, concrete floor, erect structural steel, for grade separation on Rte. 99, Cook Co., from Geo. D. Hardin, 3139 Indiana Ave., Chicago, Zone 16, **$109,961*****substructure, concrete floors, erect structural steel for grade separation on Rte. 99, Cook Co., from Contracting & Material Co., 1225 Dodge Ave., Evanston, **$120,759** ***substructure, concrete floor and erect structural steel for bridge and railroad overhead on Rte. 122, Will Co., from Powers Thompson Constr. Co., 27 S. Chicago St., Joliet, **$117,405.** CD 11/23.

Missouri—State Hy. Dpt., Jefferson City, Dec. 7, 40 ft. I-beam and plate girder spans, varying in length from 45 to 192 ft. for Southwest Trafficway Viaduct, Station 5+ plus 50, road from Southwest Trafficway Viaduct, Route 69, U1-88S (2) C. Jackson Co., from M. E. Gilliog, Monett, **$722,045;** 50 ft. rigid frame (concrete) bridge over Rt. 69 Spur, Station 7 plus 73 over Rt. 69 Spur, road from on Broadway in Penn Valley Park, Jackson Co. from Swenson Constr. Co., 2303 Terrace St., Kansas City, Mo., **$103,139.** CD 11/16.

●**N. Y., New York** — President Manhattan Boro, Municipal Bldg., Zone 7, Nov. 10, completing viaduct overpasses between Franklin D. Roosevelt Dr. and 1 Ave. at E. 42 St. and E. 48 St. etc., from Lynn Constr. Co., 11 W. 42 St., Zone 18, **$1,019,514.** Bids 11/10. CD 10/24.

Pennsylvania—State Hy. Dpt., Harrisburg, Dec. 2, continuous I-beam bridge over Little Swatara Creek and 0.22 mi. bit. surf.-crushed stone base Rural Route 28005, Swatara Twp., Lebanon Co., from John H. Swanger, Inc., Breneman Bldg., Lancaster, **$140,396.** CD 11/10.

British Columbia—Minister Wks., Parliament Bldg., Victoria, Dec. 2, bridge substructure, comprising 6 piers and 2 abutments for proposed highway bridge over Vedder Canal on Trans-Canada Hy. in Chilliwack Dist., from Northern Constr. Co. & J. W. Stewart Ltd., 1401 Hornby St., Vancouver, **$130,808.** CD 11/23.

CONTRACTS AWARDED

●**Indiana**—State Hy. Dpt., Indianapolis, 18 span, 892 ft. rein.-con girder and continuous steel beam bridge over East Fork of White River, Bartholomew Co., to R. L. Schutt Co., 215 E. New York St., Indianapolis, **$697,077;** 2 substructures over Little Calumet River and over Harrison Ave., rein.-con., steel beam and rein.-con. girder respectively Lake Co., to Arcoli Midwest Corp., Evanston, Ill., **$740,089.** Bids 11/10, awarded 12/2. CD 11/15, under LB.

West Virginia—State Rd. Comm., Charleston, Pond Creek Bridge 1793, two 106 ft. and one 133 ft. continuous steel girder spans on concrete substructure, F 306 (8) Wood Co., to Boso & Ritchie Inc., Ravenswood, **$148,887.** Bids 11/15, awarded 11/22. CD 11/7.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LISTINGS

December 20	**December 22**
Iowa	**Maryland**
Maryland	
Massachusetts	**December 28**
Ohio	**New York**
December 21	**December 29**
Pennsylvania	**New Jersey**

December 20

†**Georgia**—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala., relocating roads to Macedonia and Goodson Cemeteries, Barlow Co. Serial No. CIVENG-01-086-50-36. Extended date. CD 11/29.

December 27

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, imprv. 2,502 lin. ft. City Terrace Dr., Rowan to Wabash Ave. Approx. $50,000. C. E. Arnold, co. engr.

January 10

†**Tenn., Oak Ridge**—U. S. Atomic Energy Comm., P.O. Box 3, Attention, R. J. Dunbar, Engineering Div., Main Administration Bldg., construct West Circulatory Rd., Inv. No. 401-50-4A. Plans deposit $10.

January 17

†**Misaisaippi**—U. S Eng., P.O. Box 60, Vicksburg, constructing Hickahala Rd., Tate Co., and Commerce Rd., DeSoto Co., Arkabutla Reservoir Area, approx. 5 mi. west of Hernando, CIVENG-22-052-50-89.

LOW BIDDERS

California—State Div. Hys., 120 S. Spring St., Los Angeles, Nov. 25, plant mix on untreated rock surf., 1.5 mi. blanket of imported borrow between Montezuma Rd. and 1 mi. south of Jamestown, Tuolumne Co., from George E. France, Inc., Box 831, Visalia, **$166,324.** CD 10/31.

California—State Div. Hys., Sacramento, Nov. 30, plant mix on cement treated surf. grade separation structure, 3.1 mi. between 2.6 mi. south of Gilroy and ½ mi. south of Sargent Overhead, Santa Clara Co., from Frederickson & Watson Constr. Co., 873 81 Ave., Oakland, **$535,083.** CD 11/7.

Calif., Redwood City—City, City Hall, Nov. 21, imprv. Stafford and Arguello Sts., etc., from L. C. Smith, 1 and Railroad Sts., San Mateo. **$120,500.**

Colorado—State Hy. Dpt., Denver, Nov. 22, c. conc. road mix oil processing and structure 2.718 mi. State Hy. 185 from east city limits of Denver southeasterly toward Castle Rock, Colo. Proj. FI 00-2 (7), Arapahoe and Denver

Counties, from Peter Kiewit Sons Constr. Co., 1950 S. University St., Denver. **$347,929.** Est. $382,680. CD 11/16.

Colorado—State Hy. Dpt., Denver. Nov. 30, grading, surfacing & structures, 3.711 mi, Colo. Proj. FLH 7 (1) and 3.163 mi, State Hy. 145 between Placerville and Telluride, San Miguel Co., from J. H. & N. M. Monaghan & Assoc. Cos., Route 1, Derby. **$2,435,008.** Est. **$225,434.** CD 11/22.

Connecticut—State, G. Albert Hill, hy. comr., Hartford. Nov. 28, grading, drainage, 1.041 lin. ft., U-126 (5) roller over Main St., U-136 (6) rolled 35½ ft. clear square span over N. Y., N. H. & H. R. R., c. conc. 635 lin. ft. approaches UG-143 (2) single span rolled beam bridge UG-316 (10), Shelton-Derby Ansonia Expressway, in Derby, from Mariani Constr. Co., 222 Forbes Ave., New Haven. **$648,957** bid **$633,760** alternate CD 11/11.

Illinois—State Hys., Springfield, Dec. 2, c. conc. 8.82 mi. U. S. Rte. 24, McLean and Woodford Counties from O'Connor Constr. Co., 614 Reisch Bldg., Springfield. **$812,655.** CD 11/23.

Illinois—State Hys., Springfield, Dec. 2, 8.7 mi. concrete base course on Rte. 37, Williamson and Franklin Counties, from Triangle Constr. Co., 480 N. Evergreen Ave., Kankakee. **$127,308.** CD 11/23.

Maine—State Hy., Comn., Augusta, Nov. 23, grav. surf. 2.23 mi. Fed. Aid Secondary Proj. S-154 (3), Georgetown, from Harold Mac Quinn, Bar Harbor, Me., **$67,603;** bit. grav. surf. 4.2 mi. Fed. Aid Secondary Proj. S 51 (2), Mt. Vernon and Vienna, from Thomas DiGenzo, Calais, Me. **$91,006.** CD 11/16.

Massachusetts—Commonwealth of Mass., P. Wks. Dpt., 100 Nashua St., Boston. Nov. 22, h. conc. surf. Project FI-318 (3) Hy., Deerfield and Whately, from Lamer Bros., Inc., Sunderland. **$247,773.** CD 11/10.

Massachusetts — Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston. Nov. 29, highway and bridge, C-21-(2), Lowell, from Coleman Bros. Corp., 40 Central St., Boston. **$882,289.** CD 11/16.

Michigan—State Hy. Dpt., Upper Peninsula Office, Escanaba, Nov. 22, c. conc. 2.418 mi. U. S. Rte. 41 and M-35 bituminous surf. treatment to Teal Lake Ave. in Negaunee, Proj. U-52-33 C7 (U-137(14)); and c. conc. 1.071 mi. U. S. 41 and M-28 relocation in Negaunee from Teal Lake Ave. northeast, Proj. U-52-33 C6 (U-108(2) Marquette Co., from Rocco Constr. Co., Iron Mountain. **$314,813.** CD 11/14.

●Missouri—State Hy. Dpt., Jefferson City, Dec. 2, from Lindbergh Blvd. at U. S. Rte. 61 to St. Joseph, rolled s.one base wid'n. 20 and 22 ft., b. conc. 4.174 mi. Route 36, Sect. 41 C, road from Brookfield to Macon Co. line, Linn Co., **$79,776***** from Skrainka Constr. Co., 5173 Delmar St., St. Louis, h. conc. resurf., replacing 2 11 ft. lanes, with c. conc. paving 1.65 mi. Route 40, Sect. 83A, road from St. Louis City limits to Penn Ave., St. Louis Co., **$57,983***** from Granite City Paving Co., 3943 Duncan St., St. Louis, h. conc. paving 4.651 mi. Route 61, Sect. 72H, road from St. Louis Line south to Barnhart, Jefferson Co., **$127,601;** h. conc. paving 4.64 mi. Sect. 71B, road from St. Louis Co. line south to Barnhart, Jefferson Co., **$116,932;** h. conc. paving 4.939 mi Route 66, Sect. 40B, road from Laclede Co. line to Waynesville, Pulaski Co., **$73,901;** h. conc. 4.168 mi. Sect. 29A, road from Laclede Co. line to Waynesville, Pulaski Co., **$62,126,**

from Perry McGlone Constr. Co., 1805 Grand St., Kansas City, graded earth and 24 ft. c. conc. 3.259 mi. Route 66, road from Crawford Co. east to Junction Rt. 50, Proj. FI. 258 (4) C, Franklin Co., **$390,985;** graded earth and 24 ft. c. conc. paving 3.288 mi. Route 66, road from Crawford Co. east to Junction Rt. 50, Proj. FI 258 (4) B, Franklin Co., **$450,240;** graded earth and 24 ft. c. conc. 3.667 mi. Route 66, road from Crawford Co. east to Junction Rt. 50, Proj. FI 258 (4), Franklin Co., **$451,755,**

from Bushman Constr. Co., 5 and Felix Sts., St. Joseph, graded earth and 24 ft. c. conc. paving 0.229 mi. Route 69, Sect. 69, from Broadway in Penn Valley Park, Proj. U-888 (4), Jackson Co., **$80,801;** graded earth and 24 ft. and 36 ft. c. conc. paving 0.156 mi. Route 69, road from Southwest Trafficway to Kansas City, Proj. UI-888 (3) B, Jackson Co., **$266,863;** graded earth and 36 ft. and 72 ft. c. conc. paving 0.358 mi. Route 69, road from Southwest Trafficway in Kansas City, Proj. UI-888 (2) D, Jackson Co., **$169,243***** from Midwest Precote Co., Randolph St., Kansas City, 29 ft. h. conc. 4.285 mi. Route 69, Sect. 1, road from Excelsior Springs north to Cameron, Clinton Co., **$62,698;** h. conc. 4.215 mi. Route 69, Sect. 2, road from Excelsior Springs north to Cameron, Clinton Co., **$65,559;** ***h. conc. 5 mi. Route 69, Sec. 37-A, road from Excelsior Springs north to Cameron, Clay Co., **$77,770.** CD 11/16.

●Pennsylvania—State Hy. Dpt., Harrisburg, Dec. 2, bit. surf. crushed stone base 0.35 mi., one 2-beam bridge and drainage, Rte. 63, New Hope Boro, Bucks Co., from Kingston Contg. Co., Lattimer Mines. **$105,283***** bit. surf. crushed aggregate base 1.16 mi. Rural Route 11013, Conemaugh Twp., Franklin Boro, Cambria Co. from S. T. Brotemarkle Constr. Co., P. O. Box 393, Cumberland, Md. **$134,011 *****bit. surf. crushed aggregate base 6.74 mi. conc. reinf. con. archt., bit. surf. reconstructed base, and drainage T, R, 68, Knox and Farmington Twps., Clarion Co., from Nichols Constr. Co., 263 Main St., Brookville. **$567,382***** wid'n. 2.48 mi. pavement between Lancaster-Chester Co. lines to Gap with crushed stone base, replacing existing macadam center lane with crushed stone base and plain concrete base 10 ft. wide and bit. surf. new base and existing pavement, wid'n existing pavement with crushed stone base and bit. surf. new base and existing pavement, U. S. 30, Salisbury and Sadsbury Twps., Lancaster Co., from McMinn's Industries, Inc., R. D. 4, Lancaster. **$137,278***** from 6.5 bit. surf. one I-beam Bridge, U. S. 15, Lewis, Cogan House and Jackson Twps., Lycoming Co., from Brown, Davis & White, Box 203, Lebanon. **$437,860***** wid'n 6.04 mi. pavement between Pine Grove and Wayne-Washington Twp. line with concrete and crushed aggregate base, bit. surf. new and existing pavement, exten. rein.-con. structure, bit. surf. existing pavement, T. R. 443, Pine Grove Boro, Pine Grove, Wayne and Washington Twps., Schuylkil Co., from Charles Riebe, Lansford. **$291,400***** wid'n. 4.15 mi. pavement from Summit Grove southeasterly to Chandler Valley with plain concrete base or crushed aggregate base, bit. surf. new base and existing surf., and a metal plate arch T. R. 1004, Sugar Grove Twp., Sugar Grove Boro, Warren Co., from Mayer Bros. Constr. Co., 1227 W. 18 St., Erie, **$199,592.** CD 11/16.

CONTRACTS AWARDED

●Louisiana—State Hy. Dpt., Baton Rouge, new basin canal fill 1.945 mi, Pontchartrain Expressway, S. P. 283-07-04, F. A. P. U 409 (1), Orleans Parish, to Jahncke Service, Inc., 814 Howard Ave., New Orleans, **$1,375,851.** Bids 11/2, awarded 12/1. CD 11/9.

La., New Orleans—City, City Hall, City Purch. Div., wid'n., resurf, Jefferson Ave., subsurface drainage Benefit, Dufassat, Duels and Harmony Sts., Bungalow Court and subsurface drainage Benefit, Octavia, Hillary, Pangor, Roger Wm., and Robert Sts., to R. F. Farnsworth & Co., Inc., 1515 S. Salcedo St., **$88,317** and **$94,468** respectively***asph. resurf., Leonidas, Palm and Hampton Sts., asph. surf., Broad Ave. to Lang Co., 2500 Poydras St., **$66,416***** subsurf. drainage, Memphis, Bragg, Pratt and Carnot Sts., to Bob Bros. Constr. Co., 2400 Cypress St., **$53,084.** Grand total $304,285. Bids 11/28, awarded 11/20. CD 11/15.

Mississippi—State Hy., Comn., Walter Spiva, dir., Standard Life Bldg., Jackson, grading, drainage, culverts and bridges on U. 46, mi. Miss. Hys. 7 and 15, Lowndes and Greene Counada. Fed. Aid Proj. F-140 (2), Grenada Co., to Kle Killiman Constr. Co., Inc., Columbus **$335,691.** Bids 11/22. CD 11/18.

Miss., Natchez—Adams Co., improv. 5 roads, St. Catherine Gravel Co., Natchez. **$279,158.** Bids 11/8. CD 8 9/46.

●Pennsylvania—Pennsylvania Turnpike Comn., H. N. 4 St., Harrisburg, grading, structures, drainage, surface, 11.2 mi. 31-G Western Exten. Pennsylvania Turnpike in North Huntingdon and Hempfield Twps., Westmoreland Co., to Latrobe Road Constr. Inc., Latrobe, **$1,-422,851.** Bids 11/18, under I.B.

Tex., Post—Garza Co., Courthouse, asph. road surf., Purchase and Hire. Approx. **$100,-000.** CD 8 2.

EARTHWORK, WATERWAYS

BIDS ASKED

December 20

✝Arkansas—U. S. Eng., 300 Broadway, Little Rock, approx. 470,000 cu. yd. levee embankment, constr. two 24 in. corrugated metal pipe culverts with concrete head walls and automatic drainage gates and fertilize, sod embankment, surface and false berms on right bank Saint Francis Creek, near Marillton. Lot V, about 660,000 cu. yd. levee embankment one 24 in., one 36 in. and one triple 42 in. corrugated metal pipe culvert complete with concrete headwalls and automatic drainage gates, fertilize, sod surfaces, embankment and false berms and channel clearing, and cut-off Lot VI, 390,000 cu. yd. levee embankment, three 24 in. corrugated metal pipe culverts with concrete headwalls and automatic drainage gates one double 66 in. concrete metal pipe culvert with circular slide gates, frame, hoist, guardrailing, fertilize and sod levee embankment and false berms, clearing and cut off, Morrillton, Conway Co., Serial No. CIVENG-03-050-50-46.

✝Iowa—U. S. Eng., 1709 Jackson St., Omaha, Neb., sewer facilities addn., alterations, for internal drainage. Unit III, Section 1, Council Bluffs. CIVENG 25-066-50-92. CD 11/4.

✝Nebraska—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, repairing Jetties and Rackman Levee in vicinity of Rulo, consisting of approx. 7,725 cu. yd. embankment to be placed, in Richardson Co., approx. 3 mi. upstream from Rulo. CIVENG-25-066-50-104. Plans deposit $10. CD 6/1/44.

December 21

✝Illinois—U. S. Eng., 826 U. S. Court House & Custom House, 1114 Market St., St. Louis 1, Mo., levees Grand Tower Drainage and Levee Dist., Proj. Items II-B(1) and II-B(2), Jackson Co., CIVENG 23-065-50-44. CD 12/7.

✝Nebraska—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, removing, disposing approx. 428,500 cu. yd. overburden immediately adjacent to Missouri River on right bank at Queen Hill Quarry, in Rock Bluff Bend, Cass Co., approx. 7 mi. downstream from Plattsmouth, Inv. No CIVENG-25-066-50-100. CD 6/1/44.

About December 29

✝Washington—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, levee protection for Puyallup River, vicinity of Tacoma. Serial No. CIVENG-45-108-50-33.

✝Illinois—U. S. Eng., 826 U. S. Courthouse & Customhouse, 1114 Market St., St. Louis 1, Mo., repairs, enlargement to Spring Bayou Creek and Miller Pond Drainage & Levee Districts, Union Co., about 2 mi. east of Ware and opposite approx. Mississippi River Miles 64 to 65 about mouth of Ohio River.

December 27

✝North Dakota—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, removable bulkhead for Garrison Dam Proj. Inv. 43. CD 6/1/44.

December 28

✝Wash., Arlington—Pub. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, clearing 19-acre quarters area in Jim Creek Naval Communications Station, Specs. 23418. Plans deposit $10.

LOW BIDDERS

✝California—Bureau Reclamation, Fresno, Nov. 29, earthwork pipelines and structures for laterals 119.6 and 122.5 and sublateral Unit 1, Southern San Joaquin Municipal Utility Dist., Friant-Kern Canal Distribution System, Central Valley Proj., at Delano, Spec. 2821, from United Concrete Pipe Corp., Baldwin Park, **$846,670.** Est. $1,157,170. CD 11/2.

Calif., Redwood City—Leslie Salt Co., 310 Sansome St., San Francisco, Nov. 28, approx. 370,000 cu. yd. dredging of Redwood Harbor near here, from S. F. Bridge Co., 503 Market St., San Francisco, Approx. **$194,140.** CD 11/1.

✝Florida—U. S. Eng., P. O. Box 4970, Jacksonville, dredging Clewiston Approach *Tributary* Channel on Okeechobee Waterway, Serial No. CIVENG 08-123-50-29, from The Hendry Corp., Rattlesnake, **$180,122.** CD 11/4.

✝Florida—U. S. Eng., P. O. Box 4970, Jacksonville, Nov. 29, 6 mi. levee Proj. L-35A, Central and Southern Florida Flood Control Proj., Broward Co., Inv. No. CIVENG-08-13-50-15, from Ewell Eng. & Contg. Co., Lakeland. **$286,720.**

✝Iowa—U. S. Eng., 1709 Jackson Ave., Omaha, Neb., cancelled bids to have been opened Nov. 29, pumping stations and sewer, Unit V, Sec. 5, Flood Control adjacent to Missouri River, Inv. 83. CD 11/2.

✝Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Nov. 29, gates, operating machinery and preservation facilities for Catfish Point Control, Cameron Parish, CIVENG-16-047-50-118, from T. L. James, Ruston, **$359,025.** CD 11/2.

✝North Dakota—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, Oct. 26, reinforcing bars for Garrison Dam Proj., Inv. 71, from Webrib Steel Corp., 120 Broadway, New York, N. Y. **$172,500.** CD 6/1 44.

O., Cleveland—City, City Hall, dredging Government breakwater on Shorewood side between E. 71 and E. 72 Sts., 700,000 cu. yd. hydraulic dredging in front of municipal airport, from L. A. Wells Constr. Co., Schofield Bldg., **$150,000.**

✝Vermont—U. S. Eng., Army Base, Boston 10, Mass., received no bids Nov. 22, drilling early hole CH-1 in Ely Mountain Dam Site, West River. CIVENG-19-016-50-23. CD 11/16.

CONTRACTS AWARDED

✝Illinois—U. S. Eng., 826 U. S. Court House & Custom House, 1114 Market St., St. Louis 1, Mo., levee contr. along east bank of Mississippi River, in East Side Levee & Sanitary Dist., East St. Louis, Illinois, Items Prim I-C, St. Clair Co., CIVENG 23-045-50-10, to Sam Kraus Co., 649 Edmund Ave., St. Louis 10, Mo., **$130,853.** Bids 9/1. CD 9/9.

✝Oregon—U. S. Eng., Pittock Block, Portland, Zone 5, construct training jetty at mouth of Umpqua River, Douglas Co., CIVENG-35-026-50-125, to Kern & Kibbe, 8706 N. Bradford St., Portland, and McKinnon Constr. Co., Sandy, **$1,141,667.** Bids 11/18. CD 11/22, under I.B.

✝Oregon—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., channel and levee along Walla Walla River, Milton, Umatilla Co., CIVENG-45-164-50-72, to F. C. Scott Constr. Co., Portland, **$118,363.** Est. $108,825. Bids 11/22. CD 11/1.

AIRPORTS AND AIRBASES

BIDS ASKED

December 21

Que., Baie Comeau—AIRPORT—F. T. Collins, secy., Dpt. Transport, Hunter Bldg., Ottawa, Ont., addnl. airport development incl. clearing, stumping, grubbing. Approx. $75,000. Plans deposit $19.

LOW BIDDERS

N. Y., Binghamton—LIGHTING AIRPORT—At office Howard Davis, clk., Bd. Supervs., Broome Co., Broome County Office Bldg., Nov. 14, field lighting Broome County Airport, from Blanding Electric Co., 198 Washington St., **$108,743.** CD 10/25.

Pa., Pittsburgh—HEATING, VENTILATING, etc.—Contr., Allegheny Co., County Office Bldg., heating, ventilating, air-conditioning, Greater Pittsburgh Airport. Contr. No. 14-H-1, from McGinness, Smith & McGinness Co., 527 1st Ave. **$865,000.** Est. $1,000,000. CD 1/30/49.

CONTRACTS AWARDED

N. Y., Idlewild—UTILITY SERVICE FOR PUMPING STATION—At office Chief Engineer Port of New York Auth., 111 8 Ave., New York. Zone 11, utility services, paving, etc. for fire pumping station at New York International Airport, Contr. NYA-97, to Frederico Contr. Co., 1955 W. 5 St., Brooklyn, Zone 23, **$125,526.** Bids 11/25. CD 11/16.

†Va., Gravelly Point—STEAM LINE, etc.—Pub. Bldgs. Admin., General Services Admin., 18 and F. Sts. N. W., Wash. 25, D. C., 10 in. steam line and oil storage tank at Washington Natl. Airport, Proj. No. 44-094-7, to S. E. Duckstader, Munsey Bldg., Wash., D. C., **$140,000.** Bids 10/27, awarded 11/15. CD 11/1, under LB.

AMERICANS ABROAD

France—Electricite du France, Parish, 6,600,000 sq. ft. pre-cast concrete lining for 20 mi. canal in Rhone Valley to Bilner Vacuum Concrete, S. A., 4210 Sansom St., Phila. Pa., U. S. A.

Netherlands West Indies, Aruba—Lago Oil & Transport Co., c/o Robert Law Weed, archt., duPont Bldg., Miami, Fla., U. S. A. rejected bids Nov. 7, 200 bed hospital. CD 10/27.

LATIN AMERICA

Brazil—Companhia Hidro-Electrica Do Sao Francisco, equip. for 5 power stations along Sao Francisco River to supply power for states of Alagoas, Sengipe, Bahia, Pernambrico and Paraiba, to Westinghouse Electric International Co., 40 Wall St., New York, 5, N. Y., U. S. A. Approx. **$1,209,000.** CD 4/26/45.

Colombia, Bogota—Intercontinental Hotels Corp., 41 E. 42 St., New York 17, N. Y., awarded contract 16 story, 400 room Hotel Bochica, to Cuellar, Cerrano, Gomez y Cia. Ltda., Bogota, Colombia, **$6,500,000.** CD 4/26/48.

PUBLIC BUILDINGS

BIDS ASKED

December 19

Ont., Toronto — SCHOOL — Page & Steele, archts., 72 St. Clair Ave. W., 2 story, structural steel, brick, tile school concrete fdns., Finch Ave. E., near Bayview Ave., for School Area 1, North York Twp., Wilson Ave. Approx. $250,000. Plans deposit $50. H. M. Brownlee, c/o owner, engr.

December 20

O., Campbell—SCHOOL—Bd. Educ., John M. Roper, clk., 2514 Wilson Ave., addns. to and remodeling, Penhale, McCartney, Reed and Gordon Ave. Schools, and Memorial High Schools. Plans deposit $10. Myron N. Goodwin & P. Arthur D'Orazio, Union Natl. Bank Bldg., Youngstown, archts. CD 11/17/47.

December 21

Ga., Waynesboro — HOSPITAL — Burke County Hospital Auth., c/o Scroggs & Ewing, archts., S. F. C. Bldg., Augusta, hospital.

Kan., Kansas City—SCHOOL—Johnson Co., Hickory Grove School Dist. 40, Olathe, school addn. $250,000. J. W. Radotinsky, 1401 Fairfax Trafficway, Kansas City, Kan., archt.

●Mass. Revere—HOUSING—City of Revere Housing Auth., Police Station, 122 unit, nine 2-family, 26 four-family, Veterans Housing, Coolidge St. and Constitution Ave. Approx. $1,250,000. Plans deposit $10. Parker J. Brown, 18 Tremont St., Boston, archt. CD 12/14/45.

†Miss., Clarksdale — Housing — Clarksdale Housing Auth., 460 Prince St., 20 dwellings and office service bldg., Miss. T. J. Baker Smith, Inc., 165 Madison Ave., Memphis, Tenn., archt. CD 11/18.

●†Tenn., Oak Ridge — DWELLINGS — U. S. Atomic Energy Comm., P. O. Box 265, 450 multi-dwelling units and utilities. **$4,000,000.** Extended date. CD 10/21.

B. C., Vancouver—ADMINISTRATION—H. F. Hines, secy. Vancouver School Bd., 590 Hamilton St., 3 story, 125x180 ft., hard pressed brick face, rein.-con. administration bldg. Approx. $350,000. E. D. King, 590 Hamilton St., archt.

B. C., Vancouver—WOMEN'S RESIDENCE—Minister P. Wks., Parliament Bldgs., Victoria,- four 2 story, full bsmnt., 33x73 ft., rein.-con., women's residence group. Approx. $500,000. Plans deposit $15. Sharp & Thompson, Berwick, Pratt, 1554 Robson St., archts.

December 22

Kan., Arkansas City — ARMORY — City, armory, to double for livestock and agricultural shows. $155,000. T. M. Heter, Sterling, archt.

O., Painesville—HIGH SCHOOL—Bd. Educ., Courthouse, 2 story, part bsmnt. Riverside High School addn., Route 84. $757,000. Fulton, Krinsky & Delamotte, 6014 Euclid Ave., Cleveland, archts. CD 11/21.

Tenn., Knoxville—HIGH SCHOOL—City, City Hall. West Knoxville High School. Approx. $250,000. Bauman & Bauman, 813½ Market St., archts. CD 5/16, under LB.

Ont., Bellville—HOME—E. S. Denyes, clk. Hastings Co., 230 Church St., home for aged, Hy. 2, about 1 mi. west of here. Approx. $450,000. Plans deposit $50. Craig & Madill, 20 St. Clair Ave. W., Toronto, archts. CD 6/16.

UNIT 1014

10 TON TRUCK CRANE WITH DUAL POWER

- One Engine for Speed and Mobility
- Another Engine for Lifting or Digging
- Gas or Diesel Power
- Road Speed: 32 M.P.H.
- Capacity: 10 Tons

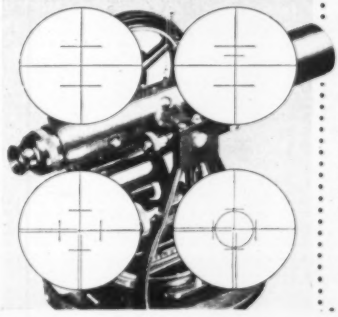
UNIT 1014 is perfectly balanced with modern, adjustable hook-roller construction. Power flows from truck engine in a direct straight-line drive to tandem rear axles, both of which drive. A separate engine powers upper structure, and may be either gas or diesel. Double full-width outriggers provide added stability. This streamlined unit has 5 speeds forward and one reverse, with an auxiliary transmission offering 10 speeds forward and 2 speeds reverse. A road speed of up to 32 M.P.H. makes "going from job to job in a hurry" a simple matter. Large diameter, wide-faced air brakes are used on all 4 rear wheels. A hand operated, shoe type parking brake is provided on propeller shaft. Short turning radius. Dimensions meet highway requirements.

Write for bulletin.

UNIT CRANE & SHOVEL CORP.
6315 W. Burnham St., Milwaukee 14, Wis., U.S.A.

● Other UNIT Models are available in ½ and ¾ Yd. Excavators and Cranes up to 15 Tons Capacity . . . Crawler or Mobile Types. Fully convertible to ALL attachments.

SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • TRENCHOES • MAGNETS



New, Improved Glass Reticles in Gurley Transits Speed Accurate Sighting

Metallic filaments deposited on Gurley glass reticles are sharply defined—equally visible against either very bright or dark backgrounds. Short stadia lines are easy to identify, prevent confusion with regular cross lines.

They're the quick-reading reticles, available in several patterns in Gurley Transits, to suit every surveying requirement and climatic condition. Write today for Bulletin 50. W. & L. E. Gurley, Union Plaza, Troy, New York.

GURLEY
Scientific and Surveying Instrument Makers Since 1845

December 23

Calif., Lawndale—STUDENT UNION, etc.—El Camino Junior College Dist., 3125 Redondo Beach Blvd., 27,000, sq. ft. rein.-con. student-union-cafeteria bldg. $400,000. Marsh, Smith & Powell, 208 W. 8 St., Los Angeles, archts.

December 28

Calif., Decoto—SCHOOL—Decoto Elementary School Dist., Decoto, frame, stucco. Henry Barnard School. $280,000. Plans deposit $25. Birge M. Clark & Walter Stromquist, 321 Channing Ave., Palo Alto, archts. CD 2/4.

Ky., Lakeland — HOSPITAL — Commonwealth of Ky., Div. Purchases, New State Office Bldg., Frankfort, 2 hospital bldgs. (female ward), $750,000. D. N. Murphy & Bros., 707 Louisville Trust Bldg., Louisville, archts. E. R. Ronald & Assoc., Heyburn Bldg., Louisville, engrs.

LOW BIDDERS

●**Mass., Fall River**—HOUSING—City of Fall River Housing Auth., 151 Sunset Hill, Nov. 30, North End Housing, Herman St., Pleasant View, Cornell, Gregson, Coster Sts., 42 Weybosset St., Providence, R. I. $1,197,000. CD 11/11.

N. J., Salem—HOSPITAL—Salem County Memorial Hospital, 87 Market St., Salem, Nov. 30, hospital addn., from Costanza Contg. Co., 622 Penn St., Camden, $574,790. CD 11/23.

●**N. Y., Long Island City**—HOUSING—New York City Housing Auth., 63 Park Row, New York, Zone 7, Dec. 6, general contract, for Sect. II, incl. Comfort Station and Bldgs. Numbered 18 to 23 (inclusive) of Ravenswood Houses Proj. No. NYC-20 in area bounded by 34 Ave., 21 St., 36 Ave. and 12 St. Queens Boro, from Caye Constr. Co., 356 Fulton St., Brooklyn, Zone 1, $4,438,990***heating and ventilating from Dierks Heating Co., 43-32 23 St., $515,000***plumbing from Lipsky & Rosenthal, Inc., Lexington Ave. and 115 St., New York, Zone 29, $595,700***electrical work, from John G. Hellman, 391 Fulton St., Brooklyn, Zone 1, $303,270. CD 11/10.

Tenn., Johnson City—HEALTH and PHYSICAL EDUCATION BLDG.—State of Tennessee, Nashville, Dec. 2, health and physical educ. bldg. at East Tennessee State College from Cassell Bros., Johnson City, $614,259. CD 11/21.

CONTRACTS AWARDED

Ky., Owensboro—HOUSING—City, 174 housing units, Projects Ky 9-1 and Ky 9-2, to Clark Constr. Co., Owensboro, $882,747. Bids 9/26. CD 10/10, under LB.

●**Md., Baltimore**—SCHOOL—City, City Hall, 2 story, brick, steel, concrete, Graceland Park-O'Donnell Heights School, to Jos. F. Hughes & Co., Inc., 511 N. Charles St., Zone 2, $1,060,-935. Bids 11/23, awarded 11/30. CD 11/30.

Md., Rising Sun—SCHOOLS—Cecil Co. Bd. Educ., Elkton, 2 story, limestone brick, steel, glass block, elementary and Junior High School, concrete fdn., to Rice & Weidmann, Manheim Pike and Keller Ave., Lancaster, Pa., $665,124. CD 11/30, under LB.

Mass., West Springfield—HOUSING—Town of West Springfield Housing Auth., 126 Park St., Birch Park Veterans Housing, Amostown Rd. Tract, to Canuano Constr. Co., 835 Memorial Ave. $676,250. Bids 11/10, awarded 11/25, CD 11/17.

Mont., Great Falls—SCHOOL—School Dist. 1, Great Falls, 2 story, steel, frame, Junior High School, to Carson Constr. Co., Helena, $361,388; school, to Askevold Constr. Co., Missoula, $583,999. Awarded 11/29. A. V. Meiver, 512 Strain Bldg., Great Falls, archt. CD 4/16.

N. C., Greensboro—DORMITORY—Agricultural & Technical College for Negroes, F. D. Bluford, pres., Greensboro, 3 story, 4,800,000 cu. ft. men's dormitory, to H. L. Coble Constr. Co., Greensboro, $980,700. Bids 11/22. CD 11/28; under LB.

N. C., North Wilkesboro — HOSPITAL — Wilkes General Hospital, J. R. Hix, chn., North Wilkesboro, 100 bed hospital, to P. S. West Constr. Co., Statesville, $551,200. Bids 11/1. CD 11/4, under LB.

●**N. C., Winston Salem**—SCHOOL—Bd. Educ., Forsyth Co., R. W. Brimley, supt., Winston-Salem, general contract, Carver School, to Fowler-Jones Constr. Co., Reynolds Office Bldg., $1,500,000. Bids 11/23. CD 11/30, under LB.

Pa., Irwin—SCHOOL—North Huntingdon Twp. Municipal Auth., c/o J. Harold Cheek, Irwin, 2 story, brick Junior-Senior High School, to Westmoreland Constr. Co., P. O. Box 32, Greensburg, $538,875. Est. $00,000. CD 9/10/48.

Tenn., Greenville—HIGH SCHOOL—Greene Co., Greenville, high school, to Armstrong Constr. Co., Kingsport, $527,000. Bids 11/22. CD 11/9.

COMMERCIAL BUILDINGS

BIDS ASKED

December 20

Md., Baltimore—DINING HALL, etc.—Levindale Hebrew Home and Infirmary, Belvedere and Cold Springs Aves., 1 story, 76x106 ft., 350,000 cu. ft., steel, concrete dining hall and kitchen, $400,000. Plans deposit $10. CD 11/14.

December 21

●**Mass., Boston** — RESEARCH — Massachusetts General Hospital, Fruit St., Cancer Research Bldg., Allen St., and 8 story, brick teaching auditorium. Approx. $2,500,000. CD 7/28.

Tenn., Chattanooga — THEATER — Center Theater, c/o Stillwell, Inc., archt., Hendersonville, N. C., theater, $300,000-$400,000.

December 22

Ky., Benham — SCHOOL — International Harvester Co., c/o D. E. Perkins, archt., Harlan, combination elementary and high school. Plans deposit $50.

Bids Asked

●**Tex., Dallas**—APARTMENT—Edward T. Dicker, 101 Laurel Land Rd., 12 story apartment, $1,500,000. Marble & Strobe, 3908 Capitol St., archts. Jacob Feld, 60 E. 23 St., New York, N. Y., structural engr. H. Blum, 2x12 Fairmount St., mechanical engr. CD 11/16.

Tex., Houston—HOME—Holly Hall, Houston Council of Church Women, c/o Cameron Fairchild, archt., 3044 San Felipe Rd., Unit 1, Old Folks Home, $500,000. CD 9/16.

SOON LETS CONTRACT

Ky., Louisville — HOSPITAL — Red Cross Hospital Assn., 1436 S. Shelby St., soon lets contract 4 story, brick hospital addn. $400,000, brick hospital addn. $400,000. CD 11/23.

Minn., Duluth—CHURCH—Zion Lutheran Church, Rev. O. M. Grimsby, 310 North 25 Ave. W., Lincoln Park, soon lets contract 1 story, bsmnt., 88x128 ft., brick, stone church, 25 Ave. W. and Grand Ave. $400,000. J. V. Vanderbilt, 617 Marquette & Newman Bldg., Minneapolis, archt. CD 10/27.

●**Pa., Phila.**—HEALTH CENTER—Philadelphia Clothing Manufacturers Assoc. and Amalgamated Clothing Workers of America, 215 S. Broad St., soon lets contract diagnostic medical health center, 22 and Chestnut Sts. $1,500,000. Edelman & Sherman Bldg., 1701 Walnut St., archts. Isadore Rosenfield, 23 W. 47 St., New York, Zone 19, engr. CD 3/24/47.

LOW BIDDERS

●**Ala., Mobile**—HOSPITAL—Mobile Infirmary, Inc., c/o low bidder, Nov. 29, hospital from Henry C. Beck Co., First National Bank Bldg., Atlanta, Ga., $3,074,700. CD 10/11.

●**N. M., Roswell**—HOUSING—Dpt. Air Force, Walker Air Force Base, from United Homes W. 8 St., Austin, Tex., $7,200,000. (Subject FHA approval.)

R. I., Westerly—CHURCH—Central Baptist Parish, Howard S. Crouch, chn. Bldg. Comm., Westerly, rejected bids Sept. 13, 1 and 2 story, bsmnt., 325,000 cu. ft. church, Elm St., L. B. $317,928. (Correction—status.) CD 10/17, under CA.

CONTRACTS AWARDED

Calif., Gardena—DWELLINGS—Sponseller & Sons, 1226 W. 58 Pl., Los Angeles, 115 frame, stucco dwellings, owner builds. $690,000.

Calif., Rivera—DWELLINGS—Allied Farms, 9700 W. Pico Blvd., Los Angeles, 99 frame, stucco dwellings, to Allied Contractors, Inc., 9700 W. Pico Blvd., Los Angeles, $564,360. Frank Green, 1515 E. Chevy Chase St., Glendale, archt.

Conn., East Hartford—HOUSING—Arthur G. Woods, 1098 Matianuck Ave., Windsor, 65 single frame houses, Forbes Ave. Owner builds. Approx. $500,000.

●**Conn., Thompsonville**—HOUSES—Arthur G. Woods & Co., 1098 Matianuck Ave., Windsor, 500 single frame houses. Owner builds. $1,000,-000-$5,000,000. CD 11/29.

●**Ill., Chicago** — APARTMENT — 7500 South Shore Drive Apartments, Inc., 7500 S. Shore Dr., Zone 49, 204x235 ft., steel, brick, concrete, stone, 120 unit apartment, to Zisook Constr. Co., 160 W. Monroe St., Zone 3, $1,200,000. Awarded 12/2. CD 7/14.

Ill., Chicago — HOSPITAL — University of Chicago, 5801 S. Ellis St., Zone 37, hospital addn., to J. W. Stout Co., 1007 N. Dearborn Ave., Zone 1, $450,000. Awarded 11/15. Schmidt, Garden & Erickson, 104 S. Michigan Ave., Zone 3, archts.

Ill., Galesburg—GYMNASIUM—Knox College, steel, concrete, brick gymnasium, to J. L. Simmons, 2100 N. Woodford St., Decatur, $393,000. Skidmore Owings & Merrill, 100 W. Monroe St., Chicago, Zone 3, archt.

La., Monroe—APARTMENTS—Park Avenue Development Corp., c/o contractor, 14 apartments, to Garnier Constr. Co., Monroe, $538,-000. CD 8/2.

●**La., Shreveport**—HOUSES—W. H. W. Homes, Inc., c/o H. F. Pettingill, Shreveport, 300 houses. Owner builds. $2,500,000.

Md., Baltimore—OFFICE and DELIVERY —Delivery of Baltimore, Inc., 205 W. Center St., brick, steel, concrete office and delivery center, to Morrow Bros., Inc., 2315 N. Charles St., Zone 18, $520,352. CD 10/6.

Mass., Beverly—HOUSING—R. O. Smithson, Jr., 24 Ober St., 1 and 2 story, 100 unit, houses. Cabot and Dodge Sts., Owner builds. $900,000.

Mich., Detroit—CHAPEL, etc.—Sisters of Mercy, Mt. Carmel Hospital, Outer Dr. and Scheafer Sts., stone masonry, rein.-con., chapel addn. and convent bldg., for Mt. Carmel Hospital, to Star Eng. Co., 1230 Maccabees Bldg., $600,000. Awarded 1130, Chas. Sullivan, 2631 Woodward Ave., archt.

●**N. Y., Jackson Heights**—APARTMENT—PML Co., c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn, Zone 2, apartment, N7 St. and south of 37 Ave. Owner builds. $1,176,000. CD 7/13.

N. Y., Jackson Heights—APARTMENT—New Salem Homes, Inc., c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn, Zone 2, 6 story apartment, 34 Ave. between 78 and 79 Sts. Owner builds. $525,000. CD 6/17.

N. Y., Jackson Heights—APARTMENT—Hair Homes, Inc., c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn, Zone 2, 6 story apartment, 34 Ave. between 77 and 78 Sts. Owner builds. $525,000. CD 6/17.

N. Y., New York—SCHOOL—Roman Catholic Church of Sacred Heart, 1253 Shakespeare Ave., 3 story school, Nelson Ave. and 168 St., to John W. Ryan Constr. Co., Inc., 369 Lexington Ave., Zone 17. Approx. $400,-000. CD 9/6.

●**N. Y., Whitestone** — GARDEN APARTMENT —Clearview Housing Co., Inc., Sam Praver, pres., 224-01 Merrick Blvd., Laurelton, 2,000 unit garden apartment to be called Clearview Houses, on 86 acre site bounded by Cross Island Parkway, 202 St., 20 Ave., Francis Lewis Blvd., separate contracts. Approx. $20,000,000. Benjamin Braunstein, 163-18 Jamaica Ave., Jamaica, archt.

N. C., Greensboro—CHURCH—Church of Our Lady of Christ, c/o contractor, church, to George W. Kane, Greensboro. Approx. $600,000.

N. C., Greensboro—CHURCH—Our Lady of Grace Church c/o Vincent S. Waters, Bishop Catholic Diocese, 15 N. McDowell St., Raleigh, church to George W. Kane, Greensboro. Approx. $600,000. Henry V. Murphy, 1 Hansen Pl., Brooklyn, N. Y., archt. CD 7/31/46.

N. C., Winston-Salem—APARTMENT—Columbia Terrace Apartments, c/o Shore Realty & Insurance Co., 12½ W. 3 St., 176 apartment units. Owner builds. $820,000.

O., Canton—BUILDING—Young Women's Christian Assn., 420 Market Ave., W., 3 story Y.W.C.A. bldg. to Melbourne Bros. Co., Mellett Bldg., $452,485. Awarded 11/24. CD 5/6.

O., Cincinnati—RESIDENCES—Royal Jackson, Inc., Galbraith Rd., Grosbeck, forty 1½ story bsmnt., brick residences, Colerain Twp., own forces. $492,000.

O., Cleveland — RESTAURANT—Hanna Building Co., 630 Hanna Bldg., remodeling restaurant in Hanna Bldg., 1468 Euclid Ave., to Albert M. Higley Co., 2036 E. 22 St., $100,000. (Correction—cost). CD 11/21, under CA.

O., Cleveland—HOMES—Progressive Constr. Co., c/o Sidney Zehman, 1464 Cedar Rd., 100 homes, W. 145, 147, 148 and 149 Sts., off Puritas Rd., separate contracts. $825,000.

O., Euclid — RESIDENCES — Sam Feiner, Inc., 2419 Canterbury Rd., Cleveland Heights, forty-eight 1½ story bsmnt. frame residences, separate contracts. $768,000.

O., Lakewood — STORE—Warren Center, Inc., c/o N. R. Lloyd, 345 Wagar Rd., Rocky River, 18 unit store and parking area, 1457 Warren Rd. to Hyman Kaplan, 17420 Winslow Rd., Shaker Heights. Approx. $700,000. Awarded 11/24. George A. Ehling, 235 Colonial Arcade, Cleveland, archt. CD 9/20.

O., Mariemont—RESIDENCES—Myers Y. Cooper, 2647 Erie Ave., Cincinnati, 24 two story, bsmnt. brick residences, separate contracts. $100,000. Ward J. Franklin, 2647 Erie Ave., Cincinnati, archt.

O., North College Hill—RESIDENCES—Joseph Hautner, 3698 Jessup Rd., Cincinnati, thirty-nine 1½ story, bsmnt., 32x36 ft. residences, one car garage, separate contracts. $510,000.

O., Parma Heights—HOMES—Dollar Constr. Co., 17063 Invermere Dr., Cleveland, sixty-six 1½ story, bsmnt. homes, Greenleaf and Beresford Rds., separate contracts. $600,000.

O., Shaker Heights—APARTMENT—Meyer Goldstein, 3715 Normandy Blvd., 3 story, bsmnt., 100 suite brick, block, steel apartment, 15800 S. Moreland Blvd., separate contracts. $500,000.

●**Pa., Phila.** — RESIDENCES — Oliver Arnold Development Co., Widener Bldg., 190 residences in 35 Ward, separate contracts. Approx. $1,500,-000.

Pa., Erdenheim (Phila., P. O.) — RESIDENCES—Chesney Downs, Inc., 838 Haines St., Phila., residential development, Springfield Twp., Avondale Rd., etc., separate contracts. $750,000.

Pa., Phila. — RESIDENCES — Gillespie Homes, Inc., 4634 N. 5 St., residential development, Gillespie St., separate contracts. $500,000. W. I. Levin, 1531 Belmont Ave., archt.

●**Pa., Quakertown** — RESIDENCES — Carl Schnabel, Allentown Rd., residential development, Route 309, separate contracts. Approx. $1,500,000.

Pa., Rosemont—RESIDENCES, etc.—Modern Housing Corp., Williams and Conestoga Rds., residential development and shopping stores, Williams Rd., separate contracts. Approx. $500,000. J. Ethan Fieldstein, Bankers Security Bldg., Phila., archt.

Pa., Springfield—RESIDENCES—Albert D. Monteith, 2100 Garret Rd., Drexel Hill, residential development, Morton Rd., etc., separate contracts. $250,000.

R. I., Barrington—HOUSING—Peck Estates Development, 57 Summer St., Brockton, Mass., frame housing, 60 family units, Peck Estate, to Campanelli Constr. Co., 57 Summer St., Brockton, Mass., Approx. $550,000. R. L. Williams, 36 Haviland St., Quincy, Mass., archt.

S. C., Columbia—HOUSING—Roosevelt Village, c/o Lyles, Bisset, Carlisle & Wolfe,

archts., 1302 Main St., 100 housing units. Owner builds. **$400,000.**

S. C., Greenville—APARTMENT—Roosevelt Heights, c/o contractor, 204 apartment units, to P. S. Cecil Constr. Co., Spartanburg. Approx. **$700,000.**

S. C., Spartanburg—APARTMENT—Highland Homes, c/o contractor, 200 apartment units, to P. S. Cecil Constr. Co., Spartanburg. Approx. **$650,000.**

S. D., Huron — DWELLINGS — Hillestad Constr. Co., Huron, dwellings. Owner builds. Approx. **$600,000.**

Tenn., Nashville—HOMES—John W. Wilson, White Ridge Rd., 66 duplex type homes in Brookside Court Annex sub-division. Owner builds. Approx. **$530,000.** CD 10/17.

●**Tenn., Tullahoma**—HOTEL—McKee Hotel, c/o contractor, 5 story hotel, to Verhey Constr. Co., 801 Bluff St., Chattanooga. Approx. **$1,000,000.**

Tex., Dallas—DWELLINGS—O. J. Parrot and Frances H. Lee & Assoc., Lawnvale and Scyene Rd., 125 dwellings, own forces. **$575,000.** CD 10/9/47.

Tex., Fort Worth—DWELLINGS—Taylor-Todd Corp., 1st. Natl. Bank Bldg., 100 dwellings near Masonic Home, own forces. **$675,000.** CD 11/9.

Tex., Houston—DWELLINGS—W. Edward Brown & Assoc., 3628 Locke Lane, 100 dwellings, near here, own forces. **$475,000.** CD 11/29/48.

Tex., Houston—DWELLINGS—W. E. Krumnow, 420 Heights Blvd., 75 dwellings, Joseph F. Meyer, Sr. area, to J. L. Jackson & Son, 511 Reden St., Approx. **$475,000.** CD 12/2.

Tex., Houston — DWELLINGS — N. H. Mitchell, E. J. Gracey & Preston R. Plumb, 4550 Griggs Rd., 100 dwellings. Owner builds. Approx. **$700,000.** CD 12/1.

●**Tex., Snyder** — RESIDENCES — Snyder Homes, Inc., Snyder, 100 residences, to Rose Constr. Co., P. O. Box 814, Abilene, Approx. **$1,100,000.** CD 12/1.

INDUSTRIAL BUILDINGS

BIDS ASKED

December 20

Kan., Scott City—POWER PLANT, etc.—Wheatland Electric Co-operative, Scott City, power plant, utilities, etc. $75,000. Extended date. Frank Horton & Co., Lamar, Mo., engrs. CD 11/21.

December 21

N. C., Rocky Mount—BAKERY—American Bakeries, Inc., c/o Stevens & Wilkinson, archts., 1157 Luckie St., N.W., Atlanta, Ga., 112x555 ft. bakery. Approx. $300,000. Plans deposit $30. CD 11/18.

Bids Asked

O., Cincinnati—PACKING PLANT—Louis Mollenkoph, archt., 4225 Kirby Ave., 1 story, bsmnt., 52x176 ft., brick, concrete block meat packing plant, for Schulz Bros. Co., 417 Findlay St. Approx. $100,000.

SOON LETS CONTRACT

Minn., Minneapolis—WAREHOUSE—General Motors Corp., 318 General Motors Research Bldg., Detroit, Mich., soon lets contract 1 story, 202x342 ft. warehouse addn., 29 Ave. S.E. and Talmadge St. $500,000.

Ont., Oshawa — FACTORY, etc. — Hanks & Irwin, archts., 2848 Bloor St. W., Toronto, soon let contract 1 and 2 story, 60x400 ft., steel, brick factory and office addn., to plant, concrete films, concrete floors in factory section and terrazzo floors in office section, for Skinner Co., Ltd., Simcoe St. Approx. $550,000.

LOW BIDDERS

Tex., Houston—AUTO SERVICE and DISPLAY—Rosenstock Motors, Inc., 1120 McKinney St., cancelled bids to have been opened Nov. 28, 32,500 sq. ft. auto service, display. **$300,000.** Will re-advertise CD 10/26.

CONTRACTS AWARDED

Ark., Little Rock—WAREHOUSE—S. J. Beauchamp, c/o contractor, warehouse, to Peterson, Garbi & Joseph, Commercial National Bank Bldg., **$300,000.** Bids 11/8. CD 11/18, under LB.

Calif., San Francisco — WAREHOUSE — Continental Assurance Co., 310 S. Michigan St., Chicago, Ill., warehouse, 3 and Egbert Sts., to Rechtel Corp., 220 Bush St., Approx. **$400,000.**

●**Mich., Lansing** — PLANT — Lansing State Journal, Lenawee and Grand Sts., 165x300 ft. steel, concrete, brick, stone, granite newspaper plant, to Algot B. Larson, Inc., 2837 W. Lake St., Chicago 24, Ill., **$1,000,000.** Bids 9/1, awarded 11/22. CD 10/13.

Minn., Minneapolis — PLANT — Madsen Constr. Co., 2110 Nicollet Ave., 1 and 2 story, L-shaped, 320x340 ft., food mfg. plant, Excelsior Blvd., Owner builds, **$480,604,** Magney, Tusler & Setter, 202 Foshay Tower, archts.

Mo., St. Louis—FACTORY—Hussmann Refrigeration, Inc., 2461 N. Leffingwell Ave., Zone 6, 1 story, 130x195 ft., rein.-con., brick, steel, 26,000 sq. ft. factory to house addn., metal fabricating machinery and roof space to park 100 cars with necessary ramp, Benton St. at Leffingwell Ave., to Fruin-Colnon Contr. Co., 1706 Olive St., Zone 3. Approx. **$300,000.**

●**S. C., Williamston**—PLANT—Textron, Inc., c/o contractor, 160,000 sq. ft. filament rayon weaving plant, to Daniel Constr. Co., Greenville. Approx. **$3,500,000-$4,000,000.**

Tex., Beaumont—GENERATING—UNIT—Gulf States Utilities Co., 362 Liberty St., generating unit, near here, to Stone & Webster Eng. Corp., McEsperson Bldg., Houston. Approx. **$425,000.** CD 11/15.

Alta., Red Deer—OIL REFINERY—Alberta Independent Refineries Ltd., Red Deer, 1,000 bbl. daily capacity oil refinery, to Sparling Davis Co., c/o owner, **$350,000.**

UNCLASSIFIED

BIDS ASKED

December 20

N. C., Lenoir — ATHLETIC FIELD — Bd. Educ., Lenoir City Admin. Unit, E. C. McCall, chn., Lenoir High School Lenoir, athletic field, grading, drives, seeding, grandstand, concrete and steel bleachers, retaining walls, water and sewer lines, etc. Plans deposit $25. Abee & Tashiron, Hollar Bldg., Hickory, archts.

Ohio — RURAL DISTRIBUTION LINES — Licking Rural Electric Co-operative, Inc., Utica, 6.32 mi. 69 kv. rural distr. lines, Knox Co. and designated as the Martinsburg Transmission Line, Proj. Ohio 41 M Licking, Blue Grass Engineers, Inc., 2700 E. Main St., Bexley, Zone 9, engr. CD 7/28.

†Pa., Willow Grove—GASOLINE STORAGE —Pub. Wks. Officer, Phila. Naval Base, Phila., aviation gasoline storage facilities, NOY 19321, Spec. 23061. $19,900.

December 21

B. C., Alert Bay—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf. Approx. $79,000. Plans deposit $20. R. Blais, c/o owner, ch. engr.

B. C. Zeballos—WHARF—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf replacement. Approx. $124,000. Plans deposit $20. R. Blais, c/o owner, engr.

December 22

Arizona—STRUCTURAL STEEL—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., fabricated structural steel for Mesa and Coolidge substations, Coolidge and Mesa, Davis Dam Proj., Arizona-Nevada, Spec. 2854. L. N. McClellan, ch. engr.

Ark., McGehee — SWIMMING POOL — City, concrete swimming pool.

December 29

†California—TUNNEL, etc.—Bureau Reclamation, Dpt. Interior, Goleta, Tecolote Tunnel and access road, Santa Barbara Proj., about 10 mi. west of Santa Barbara, Spec. 2851. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr. CD 4/20/45.

LOW BIDDERS

Ill., Chicago — FIELD HOUSE — Chicago Park Dist., 425 E. 14 St., Zone 5, 2 story, 65x130 ft. field house in West Pullman Public Park, from Jos. J. Duffy Constr. Co., 4934 Elston St., Zone 30, **$564,000.** CD 6/11/48.

Kansas—RURAL DISTRIBUTION LINES—Northwest Kansas Electric Co-operative, Bird City, rejected bids Nov. 3, 308 mi. rural distr. lines, Rawlins and Cheyenne Counties. Proj. Kansas 49 D-1 Cheyenne. New bids Dec. 13. **(Correction**—status, CD 11/22, under U.S.A.)

New York — SIGNAL and TELEPHONE EQUIP.—Bd. Transportation, 250 Hudson St., New York, Zone 13, No. 18, installing signal and telephone equip. for Hillside Ave. extens., west of Parsons Blvd. Station to 184 St., in Jamaica, D. Queens Co., from Watson-Flagg Eng. Co., 140 Cedar St., New York, Zone 6. **$753,947.** CD 11/19.

N. Y., New York—PIER—Comr. Marine & Aviation, Pier A, North River, Zone 4, Nov. 17, rehabilitation piers, Contr. A, Pier 27, foot of Catherine Slip, East River, Contr. B, Pier 28, between Catherine and Market Slips, East River, from George W. Rogers Constr. Corp., 6 Church St., Zone 6, **$88,613** and **$82,356** respectively***Contr. C, Pier 29, foot of Market Slip, East River, from Thor Wetleson, Inc., 288 Broadway, St. George, **$54,740.** CD 11/10.

N. Y., New York—SPRINKLER SYSTEM—Comr. Marine & Aviation, Pier A, North River, Zone 7, Nov. 22, Contr. 2647, installing complete sprinkler sys. and street water supply service for Piershed 59, near foot of W. 18 St., North River, from Industrial Maintenance, Inc., 108 E. 123 St., Zone 35. **$104,899.** CD 11/16.

N. Y., New York—SPRINKLER SYSTEM, etc.—Comr. Marine & Aviation, Pier A, North River, Zone 7, Nov. 23, Contr. 2655, sprinkler sys. and new street water supply service for Piershed 60 near foot of W. 19 St., North River, Manhattan Boro, from Norman Heating Co., Inc., 820 Tenth Ave., Zone 9. **$113,-170.** CD 11/16.

North Carolina—RURAL DISTRIBUTION LINES—Roanoke Electric Membership Corp., Rich Square, Nov. 22, rural distr. lines, Northampton, Hertford, Gates, Berties and Halifax Counties, from Sumter Builders, Sumter, S. C., **$122,951.** CD 11/16.

N. C., Concord—RECREATION CENTER—Concord Recreation Comn. and Concord Graded School Bd., Concord, rejected bids Nov. 9, recreation center, incl. music dept. for high school. L. B. **$153,106.** CD 11/16, under LB.

●**Oregon**—HYDRAULIC TURBINES—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., Dec. 6, 4 hydraulic turbines for McNary Dam, Umatilla Co., CIVENG-45-164-50-40, from S. Morgan Smith Co., York, Pa., **$5,040,110.** CD 10/13.

South Dakota — RURAL DISTRIBUTION LINES—Spink Electric Assn., Redfield, Nov. 3, rural distr. lines, Spink Co., from Power Eng. Co., Benson Bldg., Sioux City, Ia., **$211,596.** Huell & Winter, Insurance Exchange Bldg., Sioux City, Ia., engrs. CD 3/4.

Tex., Commerce — STADIUM, etc. — East Texas State Teachers College, Commerce, Nov. 22, stadium and field house, from Farnsworth & Chambers Co., Inc., Box 74, Houston, **$296,693** est. $200,000 and **$338,982** est. $250,-000 respectively. CD 11/16.

●**Washington**—RAILWAY RELOCATION—U. S. Eng., 19 E. Poplar St., Walla Walla, Dec. 5, relocating Spokane, Portland & Seattle Ry., connection McNary Dam, Benton Co., Serial No. CIVENG-45-164-50-43, from Morrison-Knudsen, 319 Broadway, Boise, Idaho, **$3,275,224.** CD 10/27.

●**Wyoming**—TRANSMISSION LINE — Bureau Reclamation, Dpt. Interior, Cody, Wyo., rejected bids July 6, Boysen-Thermopolis 115-kv transmission line, Transmission Division, Missouri River Basin Proj., Spec. 2693. L. B. **$162,229.** CD 7-13, under LB.

Que., Rimouski—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Nov. 23, wharf reconstr., from Compagnie des Houlevards de St. Basil, St. Basil, Approx. **$540,117.** CD 11/11.

CONTRACTS AWARDED

Arkansas — GAS TRANSMISSION LINE — Arkansas-Western Gas Co., Fayetteville, 12 mi. gas transmission lines, Benton and Washington Counties, own forces. **$134,000.**

Calif., Ferndale—EXHIBIT BLDG.—Humbolt Co., Courthouse, Eureka, 108x154 ft. exhibit bldg. at County Fairgrounds, to A. C. Johnson & Sons, 23 6 St., Eureka, **$112,994.** Bids 11-22. CD 10/11.

Ind., Fort Wayne—DRIVE-IN THEATRE—Wayne Auto Theatre, c/o Horace E. Schock, pres., Lima, O., 700 car drive-in theatre, on 19 acre tract, U. S. Rte. 30 E., separate contracts. **$150,000.**

Kansas—RURAL DISTRIBUTION LINES—Co-operative Electric Power & Light Co., Iola, 161.96 mi. rural distr. lines and 54.5 mi. of conversion, Coffey, Anderson, Woodson, Allen and Wilson Counties, to James H. Drew Corp., architects & Builders Bldg., Indianapolis, Ind. **$208,940,** Bids 11/8. CD 10/26.

Kansas—RURAL DISTRIBUTION LINES—Pioneer Co-operative Assn., Ulysses, 272.06 mi. rural distr. lines, Grant, Kearny, Haskell, Morton and Stevens Counties, to L. R. Force, National Bank, Topeka, **$256,573.** Bids 11/4. CD 11/1.

Kansas—RURAL DISTRIBUTION LINES—Twin Valley Electric Co-operative, Altamont, 161.7 mi. rural distr. lines and 47 mi. conversion, Neosho, Montgomery, Labette and Cherokee Counties, to Jillie & Cannon, 802 W. 7 St., Okmulgee, Okla., **$238,082.** Bids 11/15. CD 11/9.

Kan., Topeka — MOTOR COURT — Nellie Mosier, c/o contractor, motor court, to George Rinner, 4 and N. Lane Sts., Approx **$150,000.**

Missouri—RURAL DISTRIBUTION LINES—Co-Mo Electric Co-operative Assn., Tipton, 408 mi. rural distr. lines and 39 mi. conversion lines, in Benton, Camden, Cole, Cooper, Moniteau and Morgan Counties, to L. P. & H. Constr. Co., Linton, Ind., **$202,625.** Est. $450,-000. CD 11/10.

O., Cleveland — RADIO STATION — Radio Station WHK, 1121 Terminal Tower, radio station rear addn., alterations, remodeling to Dunbar Co., 8201 Cedar Ave. **$360,000.** CD 9/28.

O., Lockland — STADIUM — Bd. Educ., N. Cooper Ave., general contract, incl. masonry and carpentry work for 53x201 ft. stadium, to Wm. Lichtenberg & Sons, 118 S. Wayne Ave., **$157,087.** Est $278,614. Bids 11/12 awarded 11/23. CD 10/31.

O., Toledo—TRACK RELOCATION—New York Central System, E. A. Dougherty, ch. engr., La Salle St. Station, Chicago 5, Ill., track relocation at Stanley yards, 5 mi. southeast of here, to Duffy Constr. Corp., Morris and Emerald Sts., Approx. **$150,000.** CD 10/27.

Oklahoma—TRANSMISSION LINE—Grand River Dam Auth., Vinita, 23 mi. 69,000 volt electric transmission line from Tahlequah to Stilwell, to J. & J. Constr. Co., 1st Natl. Bldg., Oklahoma City, Zone 2. **$151,027.** Est. $160,000. Awarded 11/30. W. R. Holway, 302 E. 18 St., Tulsa, engr.

Texas—PIPELINES—United Gas Pipeline Co., Alamo Natl. Bldg., San Antonio, 7 mi. addnl. natural gas loop line around Austin, to Brown & Root, Inc., Box 3, Houston. **$115,-000.** CD 11/23.

Tex., Corpus Christi — GAS LINES — City Dpt., City Hall, rehabilitation and repairing gas lines in Industrial area. Purchase and Hire. **$200,000.** B. P. Ledbetter, City Hall, engr. CD 11/18/48.

W. Va., Williamson—FIELD HOUSE—City, municipal field house, to C. H. Jimison, Huntington. **$300,500.**

Que., Quebec City—ELECTRICAL SYSTEM—Municipality, installing electrical sys. for coliseum, to Girard Company Ltd., Quebec City. **$294,500.** CD 4/8.

Sask., Regina — OIL DRILLING — Bata Petroleums Ltd., Broder Bldg., oil drilling in unorganized territory in Saskatchewan, own forces. **$100,000.**

Proposal Advertisements see pp. 70 to 72

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2851) will be received by Bureau of Reclamation, Goleta, California, December 29, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of Tecolote Tunnel and access road, Santa Barbara Project, California. The work is situated about 10 miles west of Santa Barbara, California. Principal items are approximately: 164,000 cu. yds. execavation; furnishing and installing 1,000,000 lbs. steel tunnel supports; and 21,000 cu. yds. concrete; and other work. The work is divided into 3 schedules. Time allowed for completion will be 1,400 days. For particulars, address Bureau of Reclamation, Goleta, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner
(467)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2849) will be received by Bureau of Reclamation, Phoenix, Arizona, January 5, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Coolidge substation, Davis Dam Project, Arizona-Nevada. The work is situated approximately 1½ miles north of Coolidge, Arizona. Principal items are approximately: structural work, 6,320 cu. yds. excavation; 170,000 lbs. furnishing and placing reinforcement bars; 1,785 cu. yds., concrete; 830,000 lbs. erecting steel structures; 171,000 lbs. furnishing and installing various pipes, valves, and fittings; 10,195 lin. ft. furnishing and installing various sizes embedded electrical conduit; electrical work, 1,080,000 lbs. installing various types electrical equipment; 80,600 lin. ft. installing various size substation buses; 8,690 lin. ft. furnishing and installing various sizes exposed electrical conduit; 58,760 lin. ft. installing various sizes conductors and cables; and other work. Time allowed for completion will be 360 days, except as provided in the specifications. For particulars, address Bureau of Reclamation, Aviola Building, Phoenix, Arizona; or Building, 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(466)

OFFICIAL PROPOSALS

Bids: December 22, 1949 (444)

Northeast Tunnel

CONTRACT SECTIONS 2, 3, 4 AND 5
FOR THE
DEPARTMENT OF WATER SUPPLY
CITY OF DETROIT, MICHIGAN

CONTRACTS

DWS—29 A
DWS—29 B
DWS—29 C
DWS—29 D

Sealed proposals for the construction of Contract Sections 2, 3, 4 and 5 of the Northeast Tunnel will be received by the Board of Water Commissioners of the City of Detroit, at Room 506, Water Board Building, 735 Randolph Street, Detroit 26, Michigan, until 10:00 A. M. Eastern Standard Time, December 22, 1949, at which time and place they will be opened and read aloud. Proposals shall be addressed to the Board of Water Commissioners of the City of Detroit, and endorsed "Proposal for Contract No. DWS-29". Any proposal received after the time referred to above will be returned to the bidder unopened.

The work consists of the construction of four sections of the Northeast Tunnel, which will be 10 feet in inside diameter with plain concrete or brick masonry lining. Proposals may be submitted for any single section, for any number of sections in any combination, or for all sections. The approximate length of each section is as follows:

Section 2, 6,300 feet. Section 4, 5,000 feet.
Section 3, 4,500 feet. Section 5, 4,973 feet.

The Contract Documents, including Notice to Bidders, Form of Proposal and Contract, Plans and Specifications, may be examined during business hours at the office of the Department of Water Supply, Room 706, Water Board Building, Detroit, Michigan, and may be obtained upon making a deposit of Twenty-Five Dollars ($25.00) per set of complete Plans and Specifications which includes all four Sections, which sum will be refunded upon the return of the complete Contract Documents in good condition within thirty days after the bid date.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than five per cent (5%) of the total lump sum price bid, drawn payable to the City of Detroit, Board of Water Commissioners, as security for the acceptance of the Contract or Contracts.

No proposal may be withdrawn for at least 60 days after the scheduled closing time for receipt of bids.

The Board of Water Commissioners reserves the right to waive any informality in any bid and to accept or reject any or all bids, should it deem it to be for the best interests of the City of Detroit so to do.

CITY OF DETROIT
BOARD OF WATER COMMISSIONERS
Carl J. Schoeninger, President
Edward C. Roney, Vice President
R. K. Williams
Oscar Wagner
L. G. Lenhardt, Superintendent,
General Manager and Chief Engineer
E. H. Bauer,
Acting Secretary

Bids: January 24, 1949 (465)

Receiving Hospital Addition

UNIT "O"
DEPARTMENT OF HEALTH
CONTRACT BH-19

Sealed proposals for an addition to Receiving Hospital on St. Antoine Street, between Clinton and Macomb Streets, addressed to Roger V. Walker, President, Board of Health, City of Detroit, and endorsed: "Proposal for Contract BH-19", will be received at the office of the Department of Public Works, 104 City Hall, until 2:00 p.m., City of Detroit Time, on January 24, 1950, at which time they will be publicly opened and read aloud. Any proposal received after the above-mentioned time will be returned to the bidder unopened.

The work included consists of the construction of a five story T-shaped addition to the Receiving Hospital. The building is of structural steel frame with reinforced concrete floors and masonry walls. The main part of the building is approximately 217 feet long by 32 feet wide and the T-wing is approximately 90 feet long by 52 feet wide. Steam heating, air conditioning, air exhaust, refrigeration, plumbing, passenger elevators, electric dumb waiter, pneumatic message, intercommunication and electric light and power systems are included in the work.

Bids may be submitted on the following basis:

(a) For the complete job including all architectural, structural, mechanical and electrical work, elevators, etc.
(b) For the architectural and structural work only.
(c) For the mechanical work only.
(d) For the electrical work only not including the passenger elevators.
(e) For the electric passenger elevators only.

The Contract Documents, including Notice to Bidders, Form of Proposal and Agreement, Drawings and Specifications may be examined at the office of the City Engineer, 10th floor of the Griswold Building, Detroit 26, Michigan, during business hours and copies may be obtained by making a deposit of $25 per set which sum will be refunded upon the return in good condition of the complete set of Contract Documents within one month after receipt of proposals or if used in submitting a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than 5 percent of the total bid price as security for the acceptance of the Contract.

After the scheduled closing time for receipt of bids, no proposal may be withdrawn for at least 45 days.

The City of Detroit reserves the right to waive any informality in any bid or to reject any or all bids should it be deemed for its best interests so to do.

CITY OF DETROIT
ROGER V. WALKER, PRESIDENT
BOARD OF HEALTH
G. R. THOMPSON
CITY ENGINEER

OFFICIAL PROPOSALS

Bids: December 27, 1949 (468)

Sewer Construction

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 215-S

Sealed proposals for constructing the Cabin John Branch Trunk Sewer from C & O Canal to River Road, Glen Echo District, will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, until Tuesday, December 27, 1949 at 2:00 P.M., Eastern Standard Time, at which place and time they will be publicly opened and read.

The contract includes a section for which alternate bids are to be asked as follows:

Tunnel Route—
4750 feet of 24 inch special sewer pipe
250 feet of 24 inch RCCP pipe
4500 cu. yds. of rock
1500 cu. yds. of rip-rap

Open Cut Route—
4940 feet of 24 inch special sewer pipe
350 feet of 24 inch RCSP
710 feet of 24 inch RCCP
550 feet of 24 inch RCCPX
5400 cu. yds. of rock
1700 cu. yds. of rip-rap

Common to both routes is 1440 feet of 6-inch to 12-inch steel, cast iron and concrete sewers.

Plans and specifications may be obtained from the office of the Chief Engineer of the Commission, Hyattsville, Maryland, upon deposit of $5.00, which deposit will be returned to bidders or to those returning plans and specifications in good condition.

Dwight B. Galt
Warren Browning
Leland G. Worthington
Commissioners

Bids: January 10, 1949 (474)

Expansion of Terminal Building

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
CONTRACT NA-20

Sealed proposals for the expansion of the Terminal Building at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P.M., Tuesday, January 10, 1950, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $50.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, December 15, 1949.

Bids: January 10, 1949 (475)

Fill and Drainage for Runways and Taxiways

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
CONTRACT NA-25

Sealed proposals for furnishing and placing fill and drainage facilities for runways and taxiways at Newark Airport will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P.M., Tuesday, January 10, 1950, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen after December 21, 1949 at the office of the Chief Engineer and copies will be furnished after that date upon deposit of $25.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, December 15, 1949.

(Continued on page 71)

OFFICIAL PROPOSALS
(Continued from page 70)

Bids: December 29, 1949 (471)

Rt. 4 Parkway, Secs. 1, 2, 4, 5 & 6, Guard Rail

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Construction of Guard Rail on Route 4 Parkway, Sections 1, 2, 4, 5 and 6, from Route 35 to Centennial Avenue, in Woodbridge, Clark and Cranford Townships, Middlesex and Union Counties. Federal Project No. U-188(18). Length 9.015 miles.

Estimated:
17,500 lin. ft. Rough Cut Timber Guard Rail

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, December 29, 1949, at eleven o'clock (11:00 A. M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by Section 1, Public Laws 834, 80th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Cor. Maple and Fayette Streets, Perth Amboy, N. J., and 268 N. Broad Street, Elizabeth, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be 65¢ per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be 75¢ per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.25 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: December 29, 1949 (472)

Route 25, Section 34J

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Construction of an Intrachange at South Street Ramp on Route 25, Section 34J, in the City of Newark, Essex County, Federal Project No. UI-185(12). The principal items of construction are:
Estimated:
126,000 lbs. Structural Steel
188 cu. yds. Concrete in Structures
40,350 lbs. Rein. Steel in Structures

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, December 29, 1949, at eleven o'clock (11:00 A. M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adpoted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by Section 1, Public Laws 834, 80th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 305-309 Washington Street, Newark, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be 65¢ per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be 75¢ per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.25 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: December 29, 1949 (473)

Removal of Existing Passaic River Bridge

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

For the removal of the existing bridge across the Passaic River on Rutherford Avenue in the Cities of Clifton and Rutherford, Passaic and Bergen Counties. The work consists of the removal of the piers and superstructure of the bridge which has been replaced by the new crossing on Route S3, together with incidental dredging.

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, December 29, 1949, at eleven o'clock (11:00 A. M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J. and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

OFFICIAL PROPOSALS

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J. and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: January 9, 1950 (469)

George Washington Bridge West 179th Street Tunnel

THE PORT OF NEW YORK AUTHORITY
CONTRACT GWB-7

Sealed proposals for the construction of the ventilation building for the West 179th Street Tunnel, New York City, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P. M. Monday, January 9, 1950, and thereafter in the Auditorium of the Authority at the same address until 2:30 P. M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, December 15, 1949.

Bids: January 4, 1950 (470)

Newark Union Motor Truck Terminal

THE PORT OF NEW YORK AUTHORITY
MAINTENANCE AND REPAIR STATION
CONTRACT NJT-9

Sealed proposals for the construction of the maintenance and repair station for the Newark Union Motor Truck Terminal at Newark, N. J., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P. M. Wednesday, January 4, 1950, and thereafter in the Auditorium of the Authority at the same address until 2:45 P. M. on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, December 15, 1949.

(Continued on page 72)

OFFICIAL PROPOSALS

(Continued from page 71)

Bids: December 28, 1949 (450)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63 Laws of 1936, as amended, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Wednesday, December 28, 1949 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00 for 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, Dist. Engr., 333 Broadway, Albany, N. Y.				
Albany	FGRC 49-126	Gr. Sep. of The N. Y. C. R. R. with New Scotland-Wolf Hill, S. H. 366 Proj. FG 392-8	0.44	9" Cem. Conc. Pavt. 24' Wide I-R. R. Sep. Beam Br. 64½'	$29,000 Plans $5	$362,000.00
Rensselaer	FASS 49-30	Wyomanock-Garfield Proj. S-326(1)	0.58	Rob Gravel Bit. Treat. 87' 3" Alpha I-Beam Alpha $55.16	$5,500 Plans $5	$100,000.00
		DISTRICT No. 2				
		L. KETCHUM, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Herkimer	RC 49-90	Herkimer Vill.: State St., S. H. 48-11	0.95	Roadside Development	$703 Plans $5	$12,000.00
Oneida		Williams Br. over Forestport Feeder	0.07	Rob Gravel 41'-11" I-Beam Bridge	$1,200 Plans $5	$21,611.50
		DISTRICT No. 4				
		A. R. MULLIGAN, Dist. Engr., Barge Canal Term., Rochester, N. Y.				
Monroe	PSC 4763 & PSC 5938	Elim. of The N. Y. C. R. R. & The B. & O. R. R. with Hague St., Ames St., Colvin St., Child St. & York St., in the City of Rochester	0.59	Asp. Conc. Opt. 2-46' Sp. I-Beam Brs. 3' 8" x 10' Ped. Subways	$93,000 Plans $20	$1,554,000.00
		DISTRICT No. 5				
		C. R. WATERS, Dist. Engr., 65 Court St., Buffalo, New York				
Erie	FAC N749-1	City of Buffalo: Niagara Thruway (Court St. to Porter Ave.) Proj. U865-5)	1.05	9" Cem. Conc. Pvt. 2 @ 37' Wide = 0.86 Mi. Asp. Conc. Type 2-A = 0.17 Mi. Misc. Work = 0.02 Mi.	$30,000 Plans $5	$514,000.00
		DISTRICT No. 9				
		F. W. DONOVAN, Dist. Engr., 71 Frederick St., Binghamton, N. Y.				
Sullivan	FGRC 49-129	Sep. of Grs. of the N. Y. O. & W. R. R. with Bloomingburg-Monticello, Pt. 1, S. H. 5510, 5510-A Proj. FG 495-4)	0.56	9" Cem. Conc. Pavt. 36' & Var. Wide = 0.40 Mi. Misc. Work = 0.16 Mi. 47' Span I-Beam	$21,000 Plans $5	$385,000.00

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY,
Supt. of Public Works

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2857) will be received by Bureau of Reclamation, Tracy, California, until January 5, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork and structures, station 4535+00 to station 5485+50, Delta-Mendota Canal and Firebaugh wasteway, Central Valley Project, California. The work is situated in the vicinity of Firebaugh, California. Principal items are approxmately: excavation, 6,957,000 cu. yds.; earth canal lining, 1,800,000 cu. yds.; furnishing materials and placing concrete, 18,200 cu. yds.; furnishing and laying drain tile, 35,600 lin. ft.; furnishing and driving steel sheet piling, 329,000 lbs.; installing gates, hoists, and miscellaneous metalwork, 280,000 lbs.; and other work. The work is divided into 2 schedules. Time allowed for completion will be 500 days. For particulars, address Bureau of Reclamation, Tracy, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(460)

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2852) will be received by Bureau of Reclamation, Anderson Dam, Idaho, January 5, 1950, and then publicly opened for furnishing labor and materials and performing all work for the installation of electrical and mechanical equipment, Anderson Ranch Power Plant, switchyard, and outlet works, Boise Project, Idaho. The work is situated on the south fork of the Boise River about 30 miles northeast of Mountain Home, Idaho. Principal items are approximately: installing two vertical-shaft hydraulic turbines; installing two 60,000 ft.-lb. hydraulic turbine governors; installing two 15,000-kva synchronous generators; installing 328,000 lbs. of power transformers, circuit breakers, and disconnecting switches in switchyard; and other work. Time allowed for completion will be 180 days for first generating unit and 270 days for second generating unit. For particulars, address Bureau of Reclamation, Anderson Dam, Idaho; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(462)

U. S. Government

U. S. ARMY, CORPS OF ENGINEERS, NEW ENGLAND DIVISION, Army Base, Boston 10, Mass. Inv. No. Eng-19-016-50-5—Sealed bids will be received at this office until 2:00 P. M., January 4, 1950, and then publicly opened for Construction of a Veterans Administration Hospital, 500 bed General Medical and 400 bed Tuberculosis, West Haven, Connecticut, in accordance with specifications and plans, copies of which are available at this office. Deposit required of $125.00 per set for blueprints, $40.00 for half-size reproductions, and $15.00 for specifications, in form of certified check or postal money order payable to "Treasurer of the United States". (435)

MISSOURI RIVER BASIN PROJECT, Design Section, Casper, Wyoming, Specifications WH-38, November 28, 1949. NOTICE IS HEREBY GIVEN that sealed bids will be received at Casper, Wyoming until 10 a.m., Mountain Standard Time, January 10, 1950, and then publicly opened for furnishing labor and materials and performing all work for erecting an 8 stall prefabricated Government-car garage at Gering substation plot, Transmission Division, Nebraska, Missouri River Basin Project. Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: A. A. Batson, Regional Director, New Customhouse, Denver, Colorado, and L. J. Matthews, District Manager, Casper, Wyoming. No charge to prospective bidders for copies of the specifications and drawings; to others $0.50 per copy, not returnable. (464)

MISSOURI RIVER BASIN PROJECT, Design Section, Casper, Wyoming, November 28, 1949, Specifications WH-41. NOTICE IS HEREBY GIVEN that sealed bids will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, January 12, 1950, and then publicly opened for furnishing and delivering the structural steel for Pine Bluffs Town Substation, Transmission Division, Wyoming, Missouri River Basin Project.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: A. A. Batson, Regional Director, New Customhouse, Denver, Colorado, and L. J. Matthews, District Manager, Casper, Wyoming. No charge to prospective bidders for copies of the specifications and drawings; to others $0.50 per copy, not returnable. (463)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2854) will be received by Bureau of Reclamation, Denver, Colorado, January 4, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, concrete lining, and structures, Poudre Supply Canal, station 18+52 to station 294+00, Colorado-Big Thompson Project, Colorado. The work is situated near Fort Collins, Colorado. Principal items are approximately: 422,000 cu. yds. of excavation for canal, structures, and roads; 13,500 cu. yds. of concrete in structures and canal lining; furnishing and installing 24,000 lbs. of miscellaneous metalwork; and other work. Time allowed for completion will be 180 days. For particulars, address Bureau of Reclamation, New Customhouse, Denver, Colorado; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(459)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2856) will be received by Bureau of Reclamation, Cody, Wyoming, January 4, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Boysen-Thermopolis transmission line, Missouri River Basin Project, Wyoming. The work is situated near Thermopolis, Wyoming. The transmission line will be 115-kilovolt, 3-phase, single-circuit, wood-pole, H-frame type approximately 20 miles long with 2 overhead ground wires. Time allowed for completion will be 300 days. For particulars, address Bureau of Reclamation, Cody, Wyoming; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(461)

OFFICIAL PROPOSALS enable you to get the greatest variety of bids —and so to get the lowest prices consistent with the best work.

REPLIES (Box. No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

EXP. CONTRACT Man—grad. struct. engr. Familiar steel details, erection procedure, negotiation terms of contracts. Should have some purch. exp. and understand const. procedure. Long estab. Co. Location N. Y. Full particulars, salary expected, snapshot. P-1587, Engineering News-Record.

PROMINENT STEEL Plate fabricator seeks exp. designer and estimator. Location midtown, N. Y. State full exp., salary. Include photo. P-1586, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT for heavy construction with know how and practical experience who can handle work from estimating to completion. In reply give full qualifications and salary expected. P-1568, Engineering News-Record.

SUPERVISOR OF Maintenance and Construction-Maintenance Engineer with ME, EE or CE degree, to supervise preventive maintenance program and supervise construction programs in five State mental hospitals, in Central Eastern State. References. P-1571, Engineering News-Record.

CHIEF DRAFTSMAN — thoroughly experienced Structural Steel Draftsman who is also familiar with miscellaneous iron work. P-1583, Engineering News-Record.

MACHINERY SALESMAN—Excellent opportunity with aggressive company. Complete leading lines except tractors. Must be thoroughly experienced. Boelck Engineering Co., Inc., P. O. Box 12187, Houston, Texas.

WANTED CHIEF Draftsman for 500 ton per month structural fabricating plant. Location Northwestern Illinois. State age, experience, resume and salary expected. P-1575, Engineering News-Record.

SANITARY ENGINEER Wanted—Manufacturer of waste treatment equipment with national acceptance requires skilled sanitary engineer for sales promotion work. Sanitary engineering experience, intimate knowledge of treatment processes essential. Must travel. Submit full particulars. P-1494, Engineering News-Record.

WANTED: REGISTERED Civil Engineer, Pennsylvania, Concrete or Construction experience, under forty, for position with future. Salary open. P-1470, Engineering News-Record.

REINFORCING BAR Estimators & Detailers. Location Southeast. Write giving past experience in detail, also salary required. P-1486, Engineering News-Record.

WANTED: INSTRUCTOR or Assistant Professor in Structural Engineering. Professional experience desirable but not required. Salary range $3500 to $4200 for eleven months. Write or call Prof. E. C. Harris, Fenn College, Cleveland 15, Ohio.

OFFICE ENGINEER for land surveyors office. Must be thoroughly experienced in title surveys, subdivision layout and surveys for construction. Location Metropolitan New York. Excellent opportunity for competent man. P-1608, Engineering News-Record.

ARCHITECT CAN associate with one of the oldest firms of architects and engineers, metropolitan area, should know large housing and industrial designing. P-1607, Engineering News-Record.

WANTED: CIVIL Engineer capable of registering in any Southern State, including Florida. Experience on Natural Gas Distribution Systems preferred. Address: Littrell Engin. & Constr. Co., Inc., Moultrie, Georgia.

POSITIONS WANTED

ESTIMATOR-ENGINEERING Graduate, 20 years experience. Available for a position with a general contractor. PW-1604, Engineering News-Record.

CONTRACTOR'S ENGINEER, graduate civil, age 30, experience in heavy construction includes estimating, cost engineering, purchasing, and superintendence. Knows costs. Prefer South, other considered. Now employed. Available January 15. Best of reference. PW-1495. Engineering News-Record.

R.P.I. Graduate, Building Construction, January 1950. Engineering, transportation, business background. Overseas experience. Knowledge French. Age 28, married. PW-1723, Engineering News-Record.

POSITIONS WANTED

MANAGER—ESTIMATOR—Engineer: 14 yrs. experience, public, industrial, commercial, multiresidential building; and heavy construction on roads, airports, sewers, water lines, reservoirs, marine facilities, railroads, quarry operations. Desires position with gen. contractor, material supplier or mfg., equipment mfr. or dealer. PW-1540, Engineering News-Record.

PROJECT MANAGER or Construction Supt. available immediately, 47, married, 24 years experience supervising construction projects. Industrial, mechanical, commercial, waterfront, water and sewerage systems. Organize and supervise field and office. Sober and reliable. Education: Civil Engineer. PW-1521, Engineering News-Record.

GENERAL OR Assistant Superintendent. Age 48, 28 years experience on concrete bridges, highways, docks, caissons, industrial foundations, concrete dams, southern location preferred but will go any place. 3 years on foreign projects. Available Nov. 15th. PW-1455, Engineering News-Record.

WANTED: CONSTRUCTION superintendent or labor foreman with 30 years experience on all types of roads, black top, concrete, etc., pipe lines sewer and water, bridges—wants work—available now. PW-1426, Engineering News-Record.

GENERAL CONSTRUCTION, tropical climate, foreign work preferred. Experiences, 15 years carpentry, formed homes, also shop work, 2½ years railroad building, 2 years erecting ice plants, 2½ years pile driving. Have worked in British West Indies, Greenland, Asia and South America. Capable of working with or instructing native workers in any part of the world. E. P. Brunese Jr., Pawling, N. Y.

MECHANICAL ENGINEER—Age 28, experienced in take-off, purchasing, expediting, and field supervision on mechanical and process equipment. Desires position with General Contractor or Mechanical Subcontractor. Midwest location preferred. PW-1555, Engineering News-Record.

STRUCTURAL ENGINEER. Design, estimating, Structural Steel, Fabrication Erection. Thoro knowledge building construction especially ornamental, miscellaneous iron and metal building products. Excellent sales record. PW-1594, Engineering News-Record.

ESTIMATOR OR Specifications writer. Graduate, 30 years wide experience building and general construction, including estimating, specification writing, purchasing. Now located on West Coast. Salary $125 per week. PW-1716, Engineering News-Record.

BRICKLAYERS, PLUMBERS, Carpenters ready to work anywhere. Thoroughly trained by experts. Baltimore Construction Institute Inc., 8 South Paca St., Baltimore, Md.

CONSTRUCTION SUPERINTENDENT and plant engineer now employed 8-sires change C.E. and M.E. degree, 20 years experience, foreign and domestic. Houses, schools chemical plants, oil refineries. PW-1719, Engineering News-Record.

CIVIL ENGINEER, with experience airport, sewer and water, roads and streets, both design and supervision, army camps, large buildings, residental and manufacturing types, also experienced in layout and subdivision developments will be available latter part December—past middle age, good health, active. Wage requirement $500.00 month. Reply to PW-1715, Engineering News-Record.

STRUCTURAL ENGINEER—age 35, 8 years bridge design and details, 1 year structural review. Reg. P. E. Michigan. Prefer midwest. PW-1720, Engineering News-Record.

WANTED

Used Gurley

Light Mountain Transit with Burt Solar. Must be in A-1 condition. A. H. McLain, La Grande, Oregon.

BUSINESS OPPORTUNITY

Business For Sale.

Contractor wishes to retire. General Contractor estab. 32 years, large Garage for equipment, grounds, all late model machinery, 3 shovels, 4 bulldozers, Galion Grader, Galion 12 ton Roller, small rollers, 9 trucks, does a large volume of business in Northern New Jersey. Personnel and office available. BO-1519, Engineering News-Record.

WANTED

ANYTHING within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

WANTED

CONCRETE PLANT ENGINEER

An engineer thoroughly experienced in laying out concrete plants, and in crushing, mixing and paving operations is required by a large construction company. This position can be a real opportunity for a person who has a proven record in this phase of heavy construction. Give all details of experience and education in reply which will be held confidential. Salary open.

P-1700, Engineering News-Record
68 Post St., San Francisco 4, Calif.

The Housing Authority of the City of Los Angeles announces an open competitive qualifications evaluation examination for—

Development Director $743-$929 per mo.
Chief Project Planner $563-$786 per mo.
Chief Architect $563-$786 per mo.
Chief Construction Engineer $563-$786 per mo.

For a copy of announcement and application forms write to—**1401 E. 1st St. L.A. 33** and enclose self addressed airmail stamped envelope.

Filing closes Dec. 30, 1949.

Applicants must have recent substantial supervisory experience re development and construction of large scale multiple housing projects, or equivalent.

STRUCTURAL STEEL ESTIMATOR

Well known New England fabricating company has an exceptional opening for young experienced structural steel estimator. A real opportunity exists for a man with estimating and sales ability. Give in detail experience, education, etc. References will be required. Replies held strictly confidential.

P-1703, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

POSITION AVAILABLE

Civil Engineering graduate with minimum 12 years' experience to supervise project engineers on building work, waste disposal and structural design. Scheduling experience also desirable. Location in East with established chemical company. Furnish detailed resume of experience and education, also salary requirements, in reply.

P-1420, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

WANTED
BRIDGE DESIGNERS, DESIGNER DRAFTSMEN, RESIDENT HIGHWAY ENGINEERS, SOILS ENGINEER

Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.

P-1617, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

SALESMAN

wanted—with established following among general contractors in Metropolitan area. Capable of producing volume business. Lumber experience not essential. Write only, stating age, salary, & past connections. (Confidential.)

DORAN LUMBER CORP.
1040 Grand St. Brooklyn, N. Y.

30,000 KW Floating Steam-Electric Power Plant

FOR SALE

Sealed bids will be received by Puerto Rico Water Resources Authority, San Juan, Puerto Rico, until February 1st, 1950, at 2:00 P. M. and then publicly opened, for the purchase of the

Floating Power Plant Seapower

This is a complete modern steam electric generating station with a water and fuel rate comparable to modern fixed electric stations. The plant is equipped with a seagoing hull suitable for towing from one location to another.

The Power Plant is contained in a barge 358 feet in length, 50 feet in width, 9 feet draft with sufficient fuel oil storage for seven days operation at full capacity.

One General Electric Turbo Generator (condensing) 30,000 kw capacity at .8 power factor, 3 phase, 60 cycles, 13,800 volts. Equipped and capable of delivering 24,000 kw at .8 power factor, 50 cycles.

One Westinghouse 37,500 kva transformer, 13.8 kv Delta to 63/69 kv Wye or 115/132 kv Wye.

Two Babcock and Wilcox boilers with steam capacity of 170,000 pounds/hour each at an operating pressure of 825 pounds/sq. inch and operating temperature of 900 degrees F. Equipped for burning fuel oil or natural gas.

All data contained hereon are necessarily abbreviated and subject to correction. They are not intended for use as a basis for negotiation. The Authority reserves the right to reject any and all bids, and to waive any informality in bids. For specific data contact, *by air-mail*

PUERTO RICO WATER RESOURCES AUTHORITY
SAN JUAN, PUERTO RICO

1949 DeLuxe Edition **INSKIP'S TABLES** 5½ x 8½ in. Flexible Binding
by Geo. D. Inskip
SQUARES AND LOGARITHMS

PART I—Squares and Logarithms by 32nds inches to 170 feet.
PART II—Logarithmic—Trigonometric Functions, Logarithms of Numbers & other tables.
PART III—Tables of Coordinates & Slopes to 24 inches and 79 ft. Solutions of Right Triangles for any bevel. Roof Formulae and Graphics for Hip and Valley Construction + other tables.

ONLY IN INSKIP'S CAN ALL THESE VALUABLE FEATURES BE FOUND
Parts I & II, 810 pp. $7.50 Part III, 510 pp. diagrams $4.50.
Complete Tables, Parts I, II & III (One Vol.) 1320 pp. $11.00.
Device for computing circular arcs (used with tables) FREE
Bulletin on request. Order thru your bookstore or from
BERZINSKIP, Publisher, 1769 East 19th St., Brooklyn 29, N. Y.

WANTED
KOEHRING WHEELERS
Models WHD 95 Or Models WHD 125
FARRELL CONTRACTING COMPANY
1607 Wynne Ave., Saint Paul 4, Minnesota
MIDWAY 5859

WANTED
Allis-Chalmers Model M-4
PRIME MOVER
W-1625, Engineering News-Record,
520 N. Michigan Ave., Chicago 11, Ill.

WANTED
EUCLID REAR DUMPS
11 cubic yard bodies. Interested in two or more. State year, price, condition and location.
WARREN E. McCARTHY
241 Mystic Ave. Medford 55, Mass.
Tel.—Mystic 6-7346

WANTED
1—Northwest 80 D Shovel
1—Northwest #6 Combination Dragline & Crane
1—Northwest #6 Shovel
1—Northwest #25 Shovel w/ Caterpillar Diesel Engine
1—P & H Model 150 Truck Crane
1—Michigan TM16 Truck Crane
1—Barber Green 44C Ditcher
1—Bucyrus Erie #12 Ditcher
1—Huber 10 Ton 3 Wheel Roller
1—Austin 8 to 10 Ton Tandem Roller
W-1626, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

WANTED
400 H. P. LOCOMOTIVE
or equal
General Electric Model 44
2—Locomotive Cranes
30 to 50' boom
W-1624, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Need 30 ton whirley, steel cable, 105' boom, rental or purchase.
BALTIMORE CONTRACTORS, INC.
711 South CENTRAL AVENUE
BALTIMORE 3, MARYLAND

WANTED
Cable or hydraulic bulldozer for: Caterpillar D7, D4 44" gauge, and TD14, International 74" gauge.
VAN D. YETTER, JR.
East Stroudsburg, Pa.

WANTED
5/8 Clamshell Bucket
Any make, used, must be in good condition. Send price, serial number, age, condition.
MALOY, DUGAN & MALOY, INC.
Shaker Road West Albany, N. Y.

WANTED
ONE SHOVEL FRONT
For One Insley (K-12 or K-14).
VIOLA BROTHERS
56 Parris St. Portland, Me.

(Additional Equipment Wanted Ads on the opposite page)

FOR SALE

30 ton Loco. Crane, diesel
22½ ton Loco. Crane, diesel
Crawler cranes, ⅜ yd. to 5 yd., 5 months to 30 years old.
Bucyrus-Erie, model 41-B steam crane
Locomotives, standard and narrow gauge
Barber-Green Asphalt Maintenance Plant
Pile driving equipment
Hoist, gas, electric and steam power
Tank Car Heater

"STONE THE CRANE MAN"
306 ARCHITECTS BLDG.
DETROIT 1, MICHIGAN

FOR SALE

1—Euclid Loader, Model BV-3, 54" Loading belt, year 1947. Asking $12,000.
6—Euclid bottom dump 13 c.y. 190 HP. GMC motor, year 1947. Asking $9,500 each.
4—Super "C" Tournapulls with LP Scrapers, 15 c.y. Serial C3T4300 to 3T5200. Asking $6,800 each.
2—Model "C" Tournapulls with LS scrapers, 12 c.y. Serial C3T4300. Asking $5,000 each.
3—Super "C" Tournapulls with W210 tournatrailers, 13 c.y. Asking $6800 each

All this equipment in A-1 condition. Rubber practically new.

FN-1487, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

FOR SALE

1—1½ Cu. Yd. Amsco Shovel bucket, new, complete with teeth and sheave for P & H Shovel. Price $1450.00

Phone Williams 1-8600
Hillsgrove, Rhode Island

FOR SALE:

Bucyrus-Erie 200-B electric shovel, mounted on caterpillars; 10 cu. yd. bucket; shovel in excellent condition; has been used loading coal in strip mine. Reason for sale, we have installed 17 cu. yd. Bucyrus-Erie 350-B. Specifications and photographs sent on request.

NORTHWESTERN IMPROVEMENT CO.
Colstrip, Montana

WANTED
KOEHRING TRAIL-DUMPS
Cheap for Parts
ELMI CORPORATION
46 Summit St., Philadelphia 18, Pa.

Need one No. O Vulcan Hammer or equivalent, rental or purchase

BALTIMORE CONTRACTORS, INC.
711 S. CENTRAL AVENUE
BALTIMORE 3, MARYLAND

WANTED
TRENCH HOE ATTACHMENT
to fit a 1949 Bay City ¾ yard Crane.

J. P. HOLLERICH COMPANY
La Salle, Illinois

WANTED
Hydraulic Bulldozer Blade
Straight or angle, for TD-9 wide gauge tractor.

GENERAL EXCAVATING CO.
Beltsville, Md.

HEAT PORTABLE HEATER SALE!

100,000 BTU PORTABLE
HEATER and DRYER

Stewart-Warner portable, powerful 100,000 BTU gasoline-burning Heaters, with Turbine type blowers; 1¼ hp air-cooled, ball-bearing engine; 8 ducts (45-ft. total). IMMEDIATE DELIVERY.

SALE PRICE $195.00

Excellent Operating Condition **Guaranteed**

HEATING Buildings, shops, sheds, barns, warehouses, tunnels, bldgs. under construction, spot-heating, etc.

DRYING Plaster, paint, grains, mortar, concrete. Torrid blasts of heat.

PRE-HEATING Engines, tractors, trucks, equipment, etc.

THAWING Frozen areas, machinery, pipelines, tanks, etc.

- VAST QUANTITY OF REPLACEMENT PARTS
- Also SERVICE MANUAL & PARTS CATALOG

PHONE COLLECT—your Heater can be shipped within 2 hours, or SEND FOR LITERATURE

BERNSTEIN BROS.
Phone 8404 • "Since 1890" • PUEBLO, COLO.

For Sale at a Bargain Price

2—D8 Tractors 8R Series
1—D7 Tractor 7M Series
1—D8 Tractor 1H Series

All in good working condition, equipped with LeTourneau equipment.

1—Lima Model 750, 1¾ yd. diesel, air control, excellent condition.
1—Osgood Model 800, 1½ yd. diesel, air control, excellent condition.

TUCKAHOE CONSTRUCTION CO.
116 Columbus Avenue, Tuckahoe 7, N. Y.

New Guaranteed . . . 60 TON
HYDRAULIC JACKS
Navy Surplus
ILLUSTRATED CATALOG 60% off
BERKELEY DISTRIBUTORS INC.
10 JOHNSON AVE. HACKENSACK N. J.

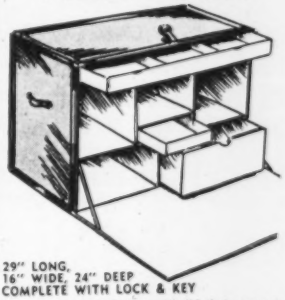
Electric Whirley Crane and Storage Bins
NEW 1941

Crane Boom 85'—4 Yard Bucket
5 Steel Bins Total Length 75' x 18'
Distribution conveyors and elevators.

Further information on request.

Benkart Steel & Supply Co.
2017 Preble Ave., Pittsburgh 12, Pa.

U. S. ARMY ENGINEER'S
FIELD DESK



29" LONG,
16" WIDE, 24" DEEP
COMPLETE WITH LOCK & KEY

A sturdy iron bound chest with lid that serves as drawing board or desk, has compartments and drawers for records etc. Has hundreds of uses. RECONDITIONED.

- ENGINEERS • SURVEYORS
- PAYMASTER • SUPERVISORS

Cost Over $52.50 — **$7.95** — 2 For $15.00

Ship. EXPRESS or MTR. FRT. F.O.B. PHILA.

BRAND NEW U. S. NAVY
WADING OR MUCKING
COVER ALL **SUITS**
WATERPROOF—UNSINKABLE

Protects your men when working in flooded excavations and ditches or when there is danger of stepping into deep water. Suit comes with inflatable air cells, attached rubber gloves and boots. Made of heavy rubberized duck.

REGULAR $40.00 VALUE **$8.95**
F.O.B. PHILA.

NEW U. S. ARMY ALL RUBBER
WATER PROOF **ARTICS**

Sturdy construction, slip proof soles, reinforced seams.
SIZES 6 to 12
4 BUCKLE $4.35
5 BUCKLE $4.95
SHIP CHG. 50¢ EXTRA

NEW—BEST QUALITY
RUBBER BOOTS
¾ STORM KING TYPE
SIZES 6-7-8-9-10-11-12 Sturdy construction, felt lined. Has reinforced instep to protect from cutting when shoveling.

REG. $10.00 QUALITY **$4.75**
SHIP. CHG. 50¢ EXTRA

U. S. NAVY
EAGLE BRAND
WROUGHT STEEL
ANVILS

400 POUND EACH
35" LONG, 15½" HIGH, 6" WIDE
REGULAR $128. VALUE **$35.** 3 FOR $100.
Ship. MTR. TRUCK OR FRT. F.O.B. PHILA.

WILL SHIP RATED FIRMS, OPEN ACCOUNT—OTHERS SEND CHECK

J. JACOB SHANNON & CO.
214 N. 22nd St., Phila. 3, Pa.
THE OLDEST EQUIP. HOUSE IN PHILA.

FOR SALE

1—Rd 7 Tractor with Cable Dozer, Double Drum Power Unit . . . $4500.00

1—P&H ½ yd. Crane Model 150 Complete with Backhoe & Shovel attachments $6500.00

1—Quickway Model E Shovel Mounted on Coleman 4 Wheel Drive $2500.00

1—Sullivan 105 cu. ft. Air Compressor, Diesel Engine on 2 Pneu. Tired Wheels $2250.00

ALL UNITS IN EXCELLENT CONDITION NOW AVAILABLE

FALLS CITY SALES CO.
1212 Wilson Ave. Louisville, Ky.
Phone Magnolia 1460

FOR SALE or RENT
ALL LATE MODELS

1—N. W. Shovel, 2½ c.y. new Oct. 1946
1—N. W. Shovel, 1½ c.y.-new April 1946
1—Allis Chalmers Tractor Model HD19H, new May 1948
5—D W 10's—used 2500 hours
1—Caterpillar Auto Patrol #12—9K4626
1—Caterpillar D8 Angledozer #8R8933
1—Caterpillar D7 Bulldozer 4T5988

WILLIAMS CONSTRUCTION CO.
Box 145, Middle River, Baltimore 20, Md.
Phone: Essex 1310

FOR SALE
Derrick — Cranes

1—100 Long Ton Shear Leg Stationery Derrick (Fla.).
2—Colby Model 200 Electric Powered Gantry Cranes (Calif.)
1—Victor R. Browning, Portal Crane, auxiliary hoist 129' 3" radius (Calif.)
1—Overhead Crane (Fla.)

SOUTHERN SALES COMPANY
P. O. Box 1427 Miami, Florida

FOR SALE
ROCK BITS

1R Type 1—11⅞", 13¾", 21⅛", 21¼" and 23⅝"
1R Type 2—13¾"
Timken Type "H"—13¾" and 21⅛"
All center hole, four point.

Offered at less than manufacturers selling price.

FS-1333, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

FOR SALE
1 Koehring 34E Dual DRUM PAVER
Good working condition, immediate delivery.
BOOTH & OLSON, Inc.
Sioux City, Iowa

SURVEYING INSTRUMENTS

USED • REBUILT • SALE
RENT • REPAIRING

4—Super "C" Tournapulls
4—LeTourneau Scrapers, Model LPE
3—LeTourneau Tournatrailers

All new in 1947—used less than 6 months —A real buy to move quick

All kinds new and used Construction Equipment for sale—send us your inquiries.

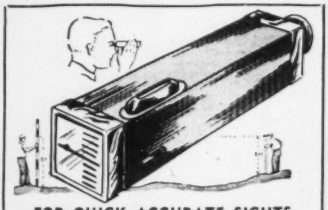
Day Phone Enka, N. C. 120
Night Phone Asheville, N. C. 5668
P. O. Box 263
Asheville, N. C.

SAFETY HELMETS—TYPE K AT A BIG SAVING

500 NEW
1000 Used, Sanitized, with NEW sweatbands
500 New Winter head and earlap sets

National Equipment Sales, Inc.
24-16 Jackson Ave., Long Is. City 1, N. Y.

FOR SALE
Bucyrus-Erie Electric Shovel
Model—1030
GOOD CONDITION
F. W. BRESNEHAN
Purchasing Agent
City Hall Watertown, N. Y.



FOR QUICK ACCURATE SIGHTS
NEW IMPROVED HAND
SIGHTING LEVELS

For preliminary survey. Ideal for builders, laying drains, roads, foundations, etc. Has thousands of uses. Comes with instructions.

SPECIAL LOW PRICE **$1.85** SHIP. CHG. 15c EXTRA

J. JACOB SHANNON & CO.
214 N. 22nd St. PHILA. 3, PA.
THE OLDEST EQUIP. HOUSE IN PHILA.

RAILS-TIES
TRACK ACCESSORIES

PORTABILT STEEL SCAFFOLDING
92 SECTIONS.
Including 150 x braces, guard rails and posts, base plates and rollers. 1 year old. Cost $3500.00 Sale price: $2200.00.

FRED F. LUTZ, JR,
R. D. #7, York, Pa. Phone: 59216

RAILS - ANGLE BARS TIE PLATES

Write for Regular Bulletins of
CURRENT LISTINGS
Complete Range of Sizes Always Available
RAIL DIVISION
COMMERCIAL METALS *Company*
LATIMER AT CORINTH, P.O. BOX 1046, DALLAS

FOR SALE
20 TON LIMA TRUCKCRANE

Sectional Boom to 92'. Plus 2 Jibs 15 & 22'.—Mounted on Heavy Mack carrier—10 wheel, 6 Cyl.—Air brakes, Outriggers, etc. Excellent condition—Price $12,000.00.

GARDNER CONSTRUCTION CO.
ALLENTOWN, PA.

Brand New Unused Northwest
SHOVEL BOOM
Model 6
McGINNIS & GRAFE, INC.
203 The Argyle Bldg. Dallas, Texas

It costs no more
to have your instruments of any make
repaired by the makers of the
WORLD'S FINEST SURVEYING INSTRUMENTS
since 1871
C. L. BERGER & SONS, INC.
37 Williams Street, Boston 19, Mass.

PILING

FOR SALE
TL 20 LORAINE CRANE
On rubber, used less than one year, excellent condition. w/ 60' boom, 1½ yd. clam, ½ yd. back hoe, ½ yd. shovel

THE WILLIAM P. BRAY CO.
365 Asylum Street Bridgeport, Conn.

SURVEYING INSTRUMENTS FOR RENT
LEVELS $15 PER MONTH

Daniel McFarland
624 Second Ave. San Francisco, 18, Calif.

For Sale or Rent
STEEL SHEET PILING

Most all lengths and sections at various locations
Vulcan and McKiernan Pile Hammers & Extractors

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. Chestnut 4474 St. Louis, Mo.

For Sale—Very Reasonable

1 Bucyrus-Erie Shovel with ¾-yard bucket; 1 Universal ½-yard Shovel; 1 Byers Combination Shovel, Crane & Backhoe, ½-yd; 1 Austin-Western 10 ton Roller; 1 International Bulldozer, model T40; 1 Caterpillar model 35 Bulldozer.

S. F. PANDOLFO CO.
444 Asylum St. Hartford, Conn.
Tel. 6-0811; evenings, 6-9614

FOR RENT OR SALE

from our yard, 948 Metcalf Ave., The Bronx

LORAIN 79 Diesel 1½ cy Shovel-Backhoe-Crane completely rebuilt
LORAIN 30 & 40 crawler ½ & ¾ cy shovel, backhoe, crane
MOTO TRUCK CRANES: Lorain - Bay City - Insley
BULLDOZERS: D-7 - TD-18 - TD-14 hydraulic and cable
SPARE PARTS for TD-18 & TD-14 tractors
DRAGLINE BUCKETS 1 cy & 2 cy
New 1½ cy P&H. 655A Shovel front
All Late Models Fully Repaired

Bendix Machinery Co., Inc.
401 Broadway, New York 13
Tel: Canal 6-5693

FOR SALE

1—Marion ¾ c.y. shovel 1942 Model 331 with Backhoe attachment complete.
1—Adams Grader, 1941 Model #303-H-371.
1—Adnun Black Top Paver—12-ft. spread Model D 226 P 3, Serial #1014.
1—Hough Payloader—Model H.L.A. International Gas Engine 60" Bucket.

All equipment recently overhauled and in first class condition, attractively priced. Further details upon request.

E. B. McGURK, INC.
P. O. Box #630, 355 Barbour Street
Hartford, Conn.
Telephone—Hartford 7-7106
S. F. Mitchell, Pur. Agent

FOR SALE

1—N. W. Shovel
1½ c.y., Diesel New, never been used.

A. V. WILLIAMS
Box 145, Baltimore 20, Md.
Phone: Essex 1312

1—Model TL-20 Lorain Crane, Serial No. 17523, four wheel drive with 35 ft. boom including a 5 ft. boom extension, 5 KW generator and electric tag line, date of purchase—February 28, 1948. Sales Price net FOB Cleveland $12,000.00.

1—Model TL-20 Lorain Crane, Serial No. 18117, purchased May 26, 1948, including 35 ft. boom, 5 ft. boom extension, 10 ft. boom extension, 5 KW generator, electric tag line reel, four wheel drive, $12,000.00.

1—TL-20 Lorain Mobil Crane, Serial No. 18149, purchased May 29, 1948, six wheel drive, 35 ft. boom with extensions, electric tag line winder and generator 5 KW, $13,000.00.

1—Bucyrus-Erie Model 43-B, Serial 11632, 60 ft. Combination dragline-crane, Atlas diesel. Approximately $12,000.00.

1—Foote 34-E Single drum paver—35 ft. boom, has been used three months, Price $11,000.00.

Subject to Prior Sale

WEPCO EQUIPMENT CO.

3366 Independence Road, BRoadway 3636 — Cleveland 5, Ohio, BRoadway 7313

Overhead Traveling Cranes
Structural Steel Buildings
Tanks - Conveyors

BENKART STEEL & SUPPLY COMPANY
2017 Preble Ave., Pittsburgh 12, Pa.

TRANSIT MIXERS

Mounted on

HEAVY DUTY TANDEM DRIVE TRUCKS

Jaeger, Rex or Smith. Horizontal or Hi-Discharge.
1941 and 1946 units. All in good operation condition.

FOR SALE

CONSERCO CO.
RIVER ROAD & B&O R.R. *Phone Oliver 2011* WASHINGTON 16, D. C.

FOR SALE

RD8 Tractor

With Cable Dozer and Cat. DDPCU. Excellent Condition.
PRICE $4500.00

W. D. CONSTRUCTION CO.
Pittsfield, Mass. Phone 21976

EXCAVATING EQUIPMENT

Truck Cranes - Bulldozers - Shovels
Trucks and Low-Boy Trailers.

JOHN SCHULTZ CONTRACTING CO.
Garden City Park, L. I., N. Y.
Phone Garden City 7-0353

FOR SALE

2 TD-9 MOTOR BLOCKS

Complete with sleeves, piston rings, wrist pins, bearing caps, etc., in original crate, new.

GENERAL EXCAVATING CO.
Beltsville, Md.

PROFESSIONAL SERVICES

Industrial Drilling and Boring Corp.
FOUNDATION BORINGS
GEOLOGICAL SURVEYS
P. O. Box 1206 1746 E. Adams St.
Jacksonville, Florida

Consoer, Townsend & Associates
Water Supply—Sewerage—Flood Control & Drainage — Bridges — Express Highways—Paving—Power Plants, Appraisals — Reports — Traffic Studies—Airports.
351 East Ohio St., Chicago 11, Illinois

Metcalf & Eddy
ENGINEERS
Investigations Reports Design
Supervision of Construction
and Operation
Management Valuation Laboratory
Statler Building, Boston

Jones, Henry & Schoonmaker
(formerly Jones & Henry)
Consulting Sanitary Engineers
Water Works, Sewerage & Treatment
Waste Disposal
Security Building Toledo 4, Ohio

52 TIMES

a year you can make contact with present or prospective clients, for your engineering services through this PROFESSIONAL SERVICES SECTION.

For information write

ENGINEERING NEWS-RECORD, 330 W. 42nd St., N. Y. 18, N. Y.

Gustave M. Goldsmith
Consulting Engineer
Structural and Building Design
Quantity Surveys
Production Planning
1734 Bella Vista, Cincinnati 29, Ohio

Albright & Friel, Inc.
Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory.
121 So. Broad St., Philadelphia 7, Pa.

NEW! Heating Unit for Winter Jobs

- Ideal for Concrete Work
- Quickly Thaws Out Materials
- Over One Million B.T.U. Output

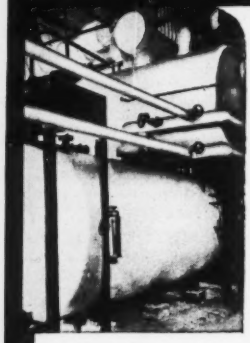
BEHLEN HEAT BLOWER

$407 FOB-Columbus, Nebr.

A sturdy, dependable heating plant. Has many construction uses. Recommended for concrete work in low temperatures. Warms aggregate at batching plant; prevents freezing concrete while setting. Just the thing for drying and curing plaster or paint and other such jobs. Preheats machinery. Burns 1 to 9 gals. distillate or kerosene an hour; furnishes up to 1,100,000 B.T.U.'s direct heat per hour. Built-in fan delivers up to 7,000 CFM at ½ inch water pressure or 5,000 CFM at 5 inches pressure up to 250° F output. Gasoline or electric motor furnished if desired. Adjustable outlet pipe is removable for adapting to fit job. Mounted on skids. Used on Federal and private construction. Almost 3,000 in use on farms dehydrating corn. Beat cold weather delays . . . write, wire for full information . . .

BEHLEN MANUFACTURING COMPANY
DEPT. 3 *COLUMBUS, NEBR.*

HERE'S YOUR COVER FINISH

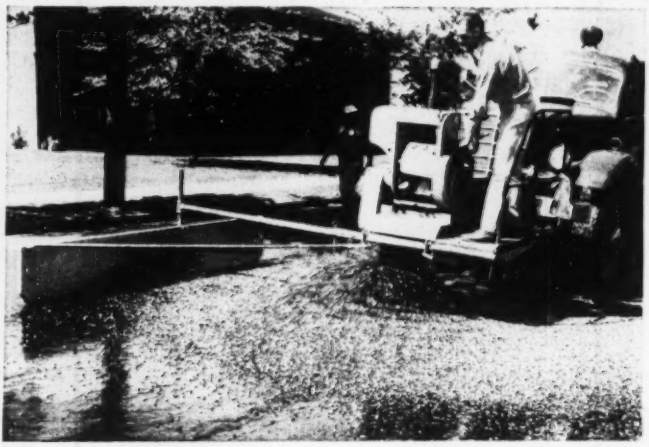


No need to sew covers onto insulation. Cementing saves time, costs less. Arabol Lagging Adhesive — developed for war needs — now meets all requirements on installations of all sizes. Easily applied, dries quickly, requires no painting. Write for Bulletin #12.

THE ARABOL MANUFACTURING CO.
110 East 42nd St., New York 17, N. Y.
1835 S. 54th Ave., Chicago 50, Ill.
1950 16th St., San Francisco 3, Cal.

Adhesives? ... ARABOL!

NEW PRODUCTS



Spinner-Disk-Type Spreader

Casting of material ahead of the truck on which this spinner-disk-type spreader is mounted is made possible by means of a heavy-duty conveyor belt that brings material forward underneath the truck. Unit easily handles sand, cinders, crushed stone, and trap rock up to ¾ in. Width of spread can be varied from 4 to 20 ft. Density or thickness of spread is controlled by changing speed of conveyor belt. Controls are provided to regulate spread of material right or left of the machine. Roadsaver can be used with any standard dump truck equipped with 8.20 tires or larger. Power is provided by a 20-hp. gasoline engine. —Gabb Mfg. Co., Inc., 16 Orchard St., East Hartford 8, Conn.

Improved Power Buggy

Improvements included on the 1950 model Power Buggy include: Increase of carrying capacity to 13 ft.; improved dumping mechanism enables operator to dump any part of the load and return bucket to position; balanced position of bucket body makes it easier to handle dumping operations; improved engine mounting; and increased traction. New-type welded-steel frame provides increased strength. Widening of load wheel base has improved stability and ease of handling of the Power Buggy.—Whiteman Mfg. Co., 3249 Casitas Ave., Los Angeles 39, Calif.

Fluorescent Street Lights

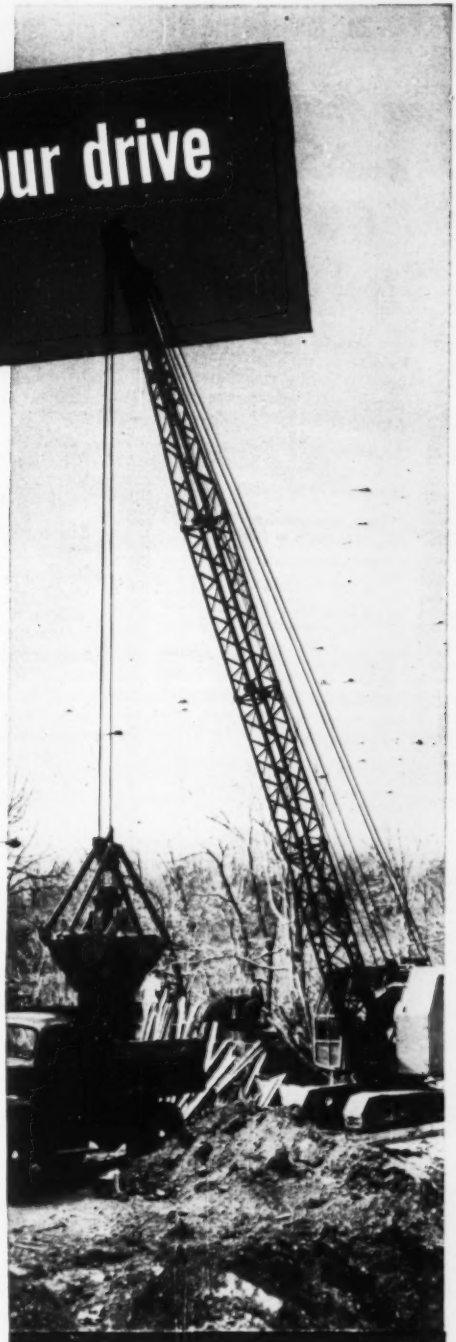
Outdoor all-weather fluorescents are reported to double the usable light of mercury streetlights and give four times the usable light of incandescents. Light from the Post-Lites fans out horizontally, is located at eye level, and is a brilliant white. For new installations, 2-in. pipe set in concrete is the only base construction required. Operates on 110-v. circuits.—W. H. Long Co., 108 W. Illinois St., Chicago 10, Ill.

Cable-Load Limit Switch

Instrument operates an electric switch when cable tension reaches a predetermined value. Can be used

(*Continued on page 80*)

Here's help in your drive for lower costs



Preformed "Blue Center" Wire Rope lasts longer...

ROPE THAT STAYS on the job longest saves you wire rope dollars; brings fewer shut-downs; cuts down replacement time. And Roebling Preformed Lang Lay "Blue Center" Steel Wire Rope gives you exactly these money-saving features . . . One big reason for this superiority is "Blue Center" Steel specially developed for wire rope and made only by Roebling. Another big reason is the Roebling Preformed construction with its unique service advantages.

WHY PREFORMED IS ECONOMICAL

Roebling Preformed is easy to handle and install because it is relatively inert and doesn't tend to set or kink. It can be cut without seizing, and fittings are more easily applied. In operation, Preformed gives outstanding life despite severe bending, and particularly where small sheaves and reverse bends occur.

FREE ENGINEERING SERVICE

Call on your Roebling Distributor for help in selecting the *right* wire rope for longest service and rock-bottom cost. If you have specially tough problems in wire rope selection, installation or maintenance, your Distributor will be glad to secure the assistance of a Roebling Engineer. John A. Roebling's Sons Company, Trenton 2, New Jersey.

WRITE OR CALL THE ROEBLING FIELD MAN AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE

Atlanta, 934 Avon Ave. ★ ***Boston,*** 51 Sleeper St. ★ ***Chicago,*** 5525 W. Roosevelt Rd. ★ ***Cleveland,*** 701 St. Clair Ave., N. E. ★ ***Denver,*** 1635 17th St. ★ ***Houston,*** 6216 Navigation Blvd. ★ ***Los Angeles,*** 216 S. Alameda St. ★ ***New York,*** 19 Rector St. ★ ***Philadelphia,*** 12 S. 12th St. ★ ***Pittsburgh,*** 855 W. North Ave. ★ ***Portland, Ore.,*** 1032 N. W. 14th Ave. ★ ***San Francisco,*** 1740 17th St. ★ ***Seattle,*** 900 First Ave.

ROEBLING

A CENTURY OF CONFIDENCE

Farm Implements

are Made, Stored and Serviced

IN

BUTLER

Steel Buildings

Here's practical, permanent housing for the manufacture, storage, sales and service of farm implements.

Butler Steel Buildings, readily adapted to many uses, bring you these advantages:

- Less investment (as much as 50%)
- Lower erection costs
- Earlier occupancy
- Long life, with less maintenance

Send coupon today for a new catalog that shows how Butler Steel Buildings are widely used in commerce, industry and agriculture.

BUTLER MANUFACTURING COMPANY

Kansas City, Mo. Galesburg, Ill.
Minneapolis, Minn. Richmond, Calif.

The Mark of BUTLER Better Quality

7418 E. 13th St., Kansas City 3, Mo.
918 6th Ave., S.E., Minneapolis, Minn.
Dept D, Shipyard No. 2, P.O. Box 1072, Richmond, Calif.

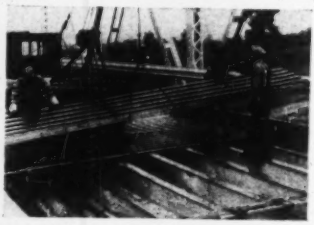
Send full information and name of nearest distributor.

NAME_____

ADDRESS_____

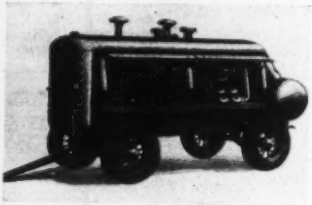
CITY_____ ZONE____ STATE____

with the holding coil of the hoist motor magnetic starter to set an alarm circuit when load limit is reached, or to set off other types of alarms. The unit can be applied to any wire cable from a ¼ to ¾-in. dia. without cutting or removing the cable. Load setting can be any value from 500 to 25,000-lb. single-line pull. An adjusting screw permits setting to any predetermined loading within the capacity of the switch. — MARTIN-DECKER CORP., 3431 CHERRY AVE., LONG BEACH 7, CALIF.



Steel Bridge Flooring

Structural-plate steel bridge flooring is designed for the replacement of wood plank flooring on highway bridges, viaducts, overpasses, and similar structures. It has a 2-in.-deep trapezoidal-corrugated section and a laying width of 33 in. Lengths are standard in 6, 8, 10, and 12 ft., and can be fabricated to full roadway width. It is available in 7, 10, and 12 gages for various loading and stringer spacing. Slots are punched to correspond with stringer locations to permit welding plates to the bridge structure.— UNITED STEEL FABRICATORS, INC., WOOSTER, OHIO.



Diesel Air Compressor

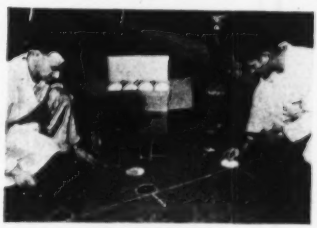
Diesel-engine drive is now available for the 500-cfm. Ingersoll-Rand Mobil-Air compressor. Power is supplied by an International Harvester heavy duty Model UD-24 engine. Feature of the KA Series of Mobil-Air compressors is the Floating-Speed regulator which slows the unit down to the lowest practical working speed to compress just enough air to hold pressure.— INGERSOLL-RAND CO., 11 BROADWAY, NEW YORK 4, N. Y.

Lightweight Safety Hat

Plastic helmet is light in weight, comfortable, waterproof, and resistant to 3,000 volts of electricity. Adjustable to all head sizes between 6½ and 8, it allows adequate clearance space between head and helmet crown to cushion and absorb blows. The Tuf-Boy helmets sustain 80 ft. lb. under ball-impact test. A two-piece flannelette-faced lining is available for winter. PARKER SAFETY EQUIPMENT CO., 785 LYON AVE., IRVINGTON, N. J.

Mercury Clutches

Series G line of mercury clutches features a choice of demountable pulleys for increased flexibility of installation. These clutches are designed for use on gasoline engines in the ¾ to 15-hp. class. Other features of the mercury clutches include compactness, automatic operation, smooth pick-up of load, elimination of engine stalling, and protection of engine from excessive overload. — AUTOMATIC STEEL PRODUCTS, INC., MERCURY CLUTCH DIVISION, CANTON 6, OHIO.



Plastic Lane Markers

Molded, plastic 4½-in. disks are easily installed on asphalt or concrete roads. The Dur-O-Line markers are applied to asphalt by means of a special mastic adhesive, and are secured by driving a 2-in. pin through the marker into the asphalt. On concrete, installation is identical except that a ¼-in. hole, ¾-in. deep is drilled in the marker and a 1-in. pin is used to secure it to the pavement.—TRAFFIC SAFETY SUPPLY CO., 2700 N. E. SANDY BLVD., PORTLAND 12, ORE.

Heatless Welding Method

Cold-pressure welding has been successfully applied to several types of non-ferrous metals. In the process, metal is made to flow away from the welding point as specially designed dies are brought together. Applied without electricity or heat, the process can be used to make three types of welds—straight welds, ring welds, and continuous seam welds. The process is available on a lease basis according to the cost of the welded parts. The company provides blueprints for constructing the welding tools, as well as engineering services, as part of the lease.—KOLDWELD CORP., 10 E. 40TH ST., NEW YORK 16, N. Y.

...for Lower-per-Yard Tooth Cost

Faster Digging and lower tooth cost result when you put *ESCO* renewable box-type points and adapters on the business end of your buckets. Here's why—

Resist Wear and Shock. These teeth are made of *ESCO* Alloy 12M, a tough, heat treated steel made especially for resisting both wear and shock of digging. Cutting edge of each point is flame hardened so that it is approximately twice as hard as the rest of the tooth.

Self-Sharpening Design. As the point wears down, it remains sharp, gives clean bite with minimum resistance.

Adapter Takes Strain of Digging. Because of perfect fit of points to adapter, the key is a locking device only. All shock and strain of digging are absorbed by the adapter. Key is held in place by a live rubber plug.

Points Quickly Replaced. Using only hammer and drift pin, four points can be changed on the job in less than five minutes.

Minimum Tooth Inventory. Operators have found it both possible and desirable to use the same tooth on different sizes of dippers and buckets, reducing the number and types of teeth maintained in stock.

To get detailed information on these work-proved teeth, see your nearest *ESCO* representative, or use the coupon below.

ESCO DRAGLINE AND DIPPER BUCKETS

ELECTRIC STEEL FOUNDRY

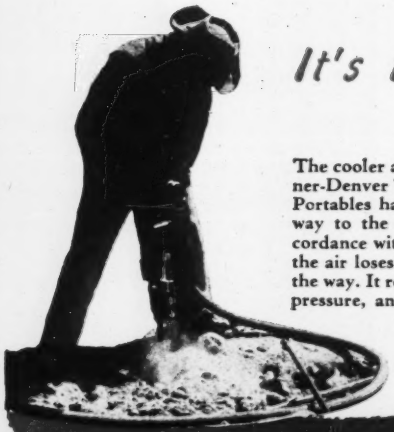
Main Plant and General Office
2167 N. W. 25th Avenue, Portland 10, Oregon

Eastern Manufacturing Plant
716 Porter Street, Danville, Illinois

Sales Offices and Warehouses

CHICAGO, ILL.	HOUSTON, TEXAS	LOS ANGELES, CALIF.
EUGENE, OREGON	SEATTLE, WASH.	NEW YORK CITY, N. Y.
HONOLULU, T. H.	SPOKANE, WASH.	SAN FRANCISCO, CALIF.

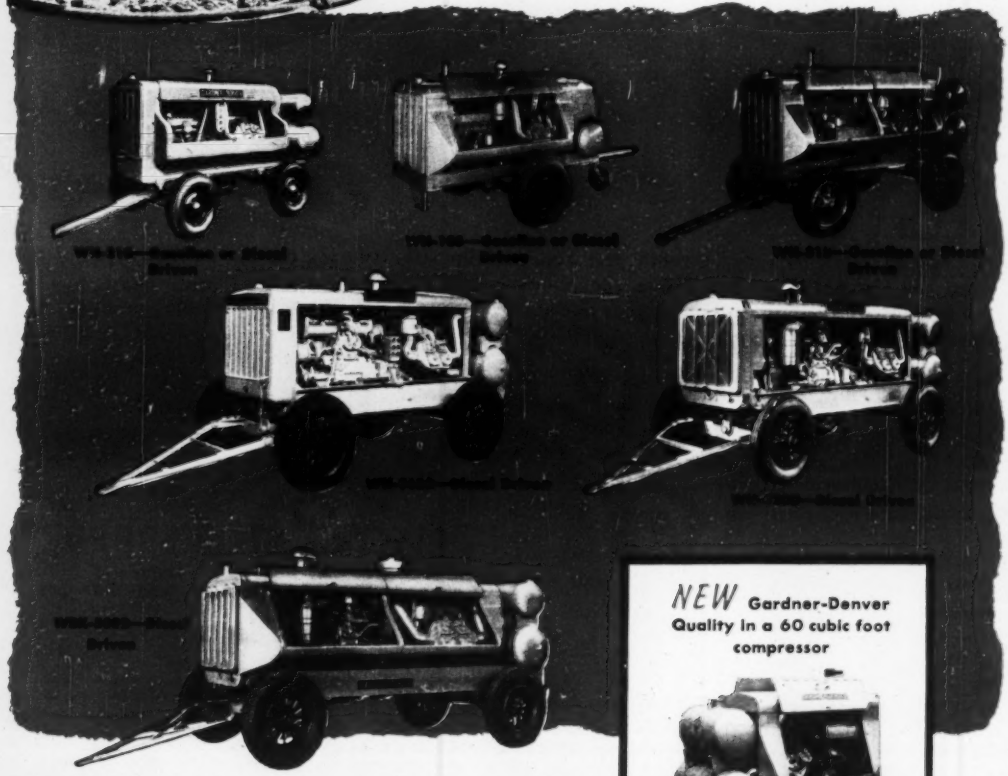
In Canada— *ESCO* Limited, Vancouver, B. C.



It's the pressure at the tool that counts!

The cooler air discharged from Gardner-Denver Two-Stage, Water-Cooled Portables has less heat to lose on the way to the tool. Therefore — in accordance with basic laws of physics — the air loses less of its pressure along the way. It reaches the tool at a higher pressure, and this vigorous air pressure lets every tool work at full capacity — full speed — full efficiency.

For a vigorous, steady, uninterrupted air supply — regardless of altitude, temperature or weather extremes — choose a Gardner-Denver Portable in the size to fit your needs. *Write today for full information.*



NEW **Gardner-Denver Quality in a 60 cubic foot compressor**

ADO-60—Utility Portable Air Compressor

GARDNER-DENVER

Since 1859

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada) Ltd., Toronto, Ontario

Manufacturers' Publications

Cast Iron Pipe; Fittings—Complete equipment for water, gas, or sewer lines is described in a 312-p. catalog. The catalog contains general information about cast iron pipe, engineering and design data, and illustrated tables listing each item in the line. Accessories manufactured by the company include water works supplies, eddy hydrants and valves, and cast iron manholes.—James B. Clow & Sons, 201 N. Talman Ave., Chicago 80, Ill.

Window-Glass Replacement—How to repair broken window glass is described in new booklet which explains step-by-step, in layman's language, the entire glazing process. It begins with information on how to remove fragments of broken glass and concludes with suggestions for cleaning excess putty from the new glass and painting the new putty to match trim. Also included is a checklist of tools and supplies that are necessary for satisfactory glass replacement work. —Libbey-Owens-Ford Glass Co., Nicholas Bldg., Toledo 3, Ohio.

Expansion Joint Design Guide—Nontechnical booklet (28 pp.) contains numerous illustrations, charts, and tables designed to simplify the selection and application of expansion joints in piping systems. Data serve as guide in proper selection of size and type joint necessary to fulfill varying requirements of temperature, pressure, and other factors surrounding each individual application.—Chicago Metal Hose Corp., Maywood, Ill.

Asphalt Heater—Combination circulating and steam heater for tank cars of asphalt is described in 2-color 8-p. catalog. Feature of catalog is a cutaway view of the Rapid Fire unit showing flow diagram through heat exchanger as well as component parts of the unit. Another cutaway drawing—of the right side of the unit—shows location of the asphalt pump and other principal parts of the heater. —W. E. Grace Mfg. Co., 6000 S. Lamar St., Dallas, Tex.

Blow Torches; Soldering Products—Complete line of soldering products is listed in 24-p. Catalog 85. These include gasoline and kerosene blow torches, self-generating alcohol blow torches, electric soldering irons, solder, splicer's furnaces, paraffin supplies, and others.—P. Wall Mfg. Co., 291 Erie St., Grove City, Pa.

Above are two views of small Sauerman Tautline Cableways in action. Upper view shows a travelling unit of 2-ton load capacity, pouring concrete for a covered reservoir. Lower view is a 2-ton machine of stationary type that spans a South American river 400 ft. wide and serves as a combined bridge and ferry. These simple, light Sauerman machines are as big money savers in their own field as the heavy duty Sauerman Tautlines are on large construction jobs.

YOU CAN SAVE

with

SAUERMAN

Cableways and Scrapers

Sauerman Catalogs are full of proof of how engineering problems are simplified and labor costs reduced when materials are handled the Sauerman Way.

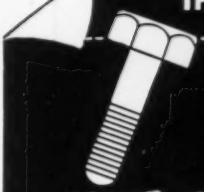
Alike in principle, Sauerman Machines are made in several types, each for its particular kind of work. TAUTLINE CABLEWAYS (pictured at left) for lifting and aerial conveying; SLACKLINE CABLEWAYS for excavating from pits, ponds and rivers and conveying to high point; POWER SCRAPERS for moving material from banks, pits or stockpiles; TOWER EXCAVATORS (mobile) for large scale earthwork requiring a machine that digs a wide cut and moves along as it digs.

★ *Write for Catalog of Sauerman Equipment for work you are interested in and let us counsel with you on your problems.*

SAUERMAN BROS., Inc.

532 SO. CLINTON ST. CHICAGO, ILLINOIS

IF IT'S IRON OR STEEL



REMEMBER to have it HOT DIP GALVANIZED

(DIPPED IN MOLTEN ZINC)

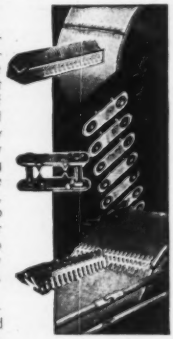
"Hot-Dip" means actually dipping the steel in a tank of molten zinc. No other method of galvanizing will provide the fusion of metals and perfect seal necessary for effective rust prevention. You are assured a Hot-Dip Galvanizing job of the highest quality when you send your materials to a member of the American Hot Dip Galvanizers Association. For a list of members, write to the Association's headquarters in the First National Bank Bldg., Pittsburgh 22, Pa.

YEARS of unfailing operation have established the reputation of Earle operating machinery on movable bridges. For this reason Earle equipment is so often selected to operate railroad and highway bridges of all sizes. Earle experience and "over-sized" construction assure a minimum of wear and years of trouble-free, economical operation with little or no maintenance. Earle engineers will help you meet your gear or machinery problem, routine or unusual—get in touch with us, now. Or, if you want further information first, write for our NEW catalog containing Earle operating machinery. THE EARLE GEAR & MACHINE COMPANY, 4717 Stenton Avenue, Philadelphia 44, Pa.

INCORPORATED IN EARLE OPERATING MACHINERY **EARLE GEARS**

ARMSTRONG-BRAY

WIREGRIP precision made Belt Hooks come with extra (patented) blue aligning cards—are held more rigid, assuring perfect alignment of hooks—less hook loss from handling—a better job when applied with any make lacing machine. 6 sizes



PLATEGRIP Fasteners for . . . Conveyor Belts. Make strong dust-tight joints in belts, of any width. Spread tension uniformly across belt, allow natural troughing of belt and operate smoothly over flat, crowned or take-up pulleys. Sizes for belts from ¼" to 1½" thick. Easily applied anywhere.

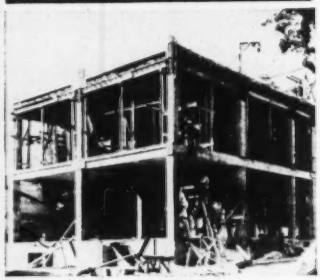
STEELGRIP Flexible Lacing, applied with a hammer, clinches over and protects end of belt. Makes strong, flexible joints. Boxed with 2-piece hinged rocker pins or can be obtained in long lengths for conveyor belt use.

ARMSTRONG-BRAY & CO.

"The Belt Lacing People"

5320 Northwest Hwy. Chicago, Ill.

INCREASED PROFITS WITH REDUCED COSTS BY USING ECONOMY STEEL FORMS



Cost records from job after job prove that Economy's system of Form Engineering and Rental Service means substantial savings in TIME—MATERIAL—MONEY for GREATER PROFITS.

ECONOMY FORMS CORP.

Home Office • Des Moines, Iowa

BRANCH OFFICES: Metuchen, N. J.; Fort Wayne, Ind.; Denver Colo.; Los Angeles, Cal. Decatur, Ga.; Dallas, Texas;

ADVERTISERS IN THIS ISSUE

Allis-Chalmers Mfg. Co. ..... 2nd Cover
Aluminum Co. of Amer. 7
American Hot Dip Galvanizers Assn. 83
American Mutual Liability Ins. Co. 10, 11
American Steel Dredge Co., Inc. 57
Arahol Mfg. Co. 78
Armco Drainage & Metal Products, Inc. 16
Armstrong-Bray & Co. 84

Bailey Meter Co. 63
Baldwin Locomotive Wks. 60
Bay City Shovels 9
Behlen Mfg. Co. 78
Bethlehem Steel Co. 48
Butler Mfg. Co. 80

Carnegie-Illinois Steel Corp. 85
Cast Iron Pipe Research Assn. 4, 5
Cement Gun Co. 59
Chevrolet Motor Div., General Motors Corp. 18
Chicago Bridge & Iron Co. 3
Chrysler Corp. 13
Cleco Div., Reed Roller Bit Co. 54
Clyde Iron Wks., Inc. 22

Dixie Cup Co. 47
Dravo Corp. 64

Earle Gear & Machine Co. 84
Economy Forms Corp. 84
Electric Steel Fdry. 81

Erie Steel Constr. Co. 15
Fuller Mfg. Co. 57

Gardner-Denver Co. 82
Golden-Anderson Valve Speciality Co. 6
Gunite Concrete & Construction Co. 57
Gurley, W. & L. E. 67

Hartford Fire Insurance Co. 52
Hartford Accident & Indemnity Co. 52
Hauck Mfg. Co. 50
Heltzel Steel Form & Iron Co. 14
Homelite Corp. 50

Ingalls Iron Wks. 45

Jaeger Machine Co. 63
Joy Mfg. Co. 57

Keasbey & Mattison Co. 44
Kennedy Valve Mfg. Co. 12

Leece-Neville Co. 59
Leupold & Stevens Instruments 2

McCaffrey-Ruddock Tagline Corp. 56
McKiernan-Terry Corp. 57
Merritt Chapman & Scott Corp. 86, 87
Moretrench Corp. 60
Motorola, Inc. 1

Peerless Pump Div., Food Machry. & Chemical Corp. 20

Raymond Concrete Pile Co. ..... 3rd cover
Richmond Screw Anchor Co., Inc. 51
Roebling's Sons Co., John A. 79

Sanstorm Mfg. Co. 63
Sanymetal Products Co., Inc., Nailock Steel Div. 54
Sauerman Bros., Inc. 83
Servicised Products Co. 64
Sprague & Henwood, Inc. 63
Standard Oil of Calif. 8
Standard Oil Co. of Indiana 53

Templeton, Kenly & Co. 57
Timken Roller Bearing Co. ..... 4th Cover

Unit Crane & Shovel Corp. 67
U. S. Steel Corp. Subsidiaries 85

Wenzel Tent & Duck Co., H. 55
Yeomans Brothers Co. 46

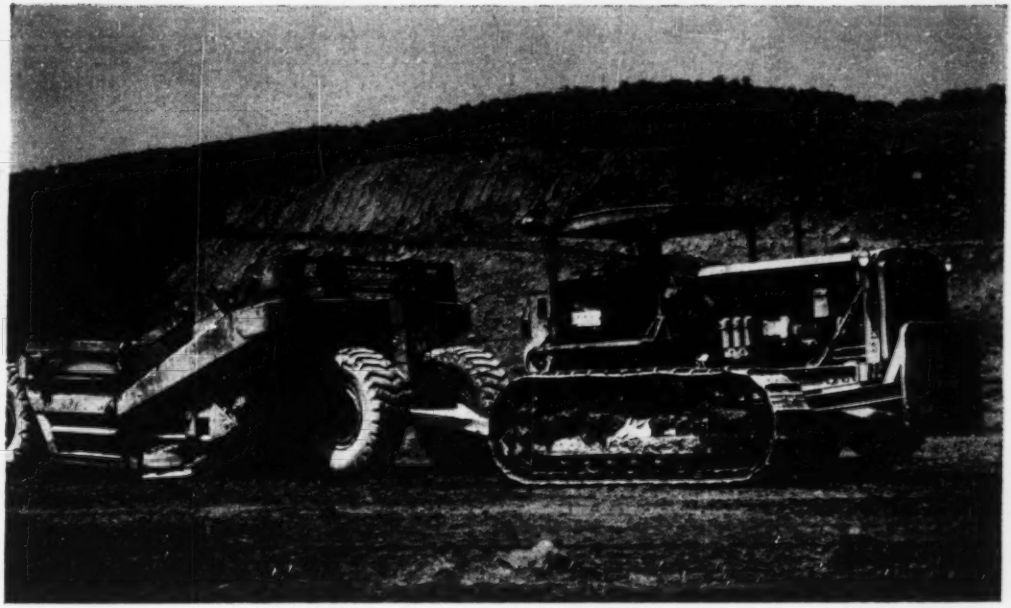
Searchlight Section

Classified Advertising ..... *pgs.* 70-77

ENGINEERING NEWS-RECORD

G. R. RAMEE, Sales Manager — HOWARD OLSEN, Business Manager

Sales Representatives—Fred G. Hudson, L. H. Hunt and H. L. Keeler, 520 N. Michigan Ave., *Chicago* 11; Ralph Dorland, 68 Post Street, *San Francisco* 4; D. S. Robertson and W. G. Payne, 330 W. 42nd St., *New York* 18; A. B. Cozens, 17th and Sansome Sts., *Philadelphia* 3; E. E. Duff, Jr., Hanna Bldg., *Cleveland* 15; B. F. Horn, Penobscot Bldg., *Detroit* 26; W. E. Donnell, Continental Bldg., *St. Louis* 8; C. F. McReynolds, 621 So. Hope St., *Los Angeles* 14; Ralph Maultsby, Rhodes-Haverty Bldg., *Atlanta* 3; J. H. Allen, First National Bank Bldg., *Dallas* 1. Other sales offices—738-39 Oliver Bldg., *Pittsburgh*; 1427 Statler Bldg., *Boston* 16; Aldwych House, *London*, England.



U·S·S CARILLOY STEELS

will strip "overburden" too

A CERTAIN AMOUNT of weight is a definite asset in heavy-duty construction and earth-moving equipment — but *too* much weight is a handicap. If your equipment is heavier than it need be, its operation is slowed down, its maneuverability is impaired, its capacity is reduced. Unless you strip off this overburden of excess weight, your equipment wastes power, won't operate at peak capacity—and your costs inevitably go up.

Manufacturers of equipment outstanding for its stamina and capacity know this. That's why so many of them use U·S·S Carilloy in vital parts—in fact, wherever working stresses are concentrated.

In the axles of big-capacity scrapers and bulldozers . . . in the transmission and differential gears, pinions, jack shafts and counter shafts of giant dump trucks . . . in the dipper sticks, dippers and booms of the world's biggest power shovels, U·S·S Carilloy Steels have cut weight to the bone, have greatly increased strength and wearing qualities, and often have lowered manufacturing costs as well.

Is your equipment overweight? Does it demand the unusual in strength, abrasion resistance, durability and fabricating qualities? Bring your problem to us and let us show you how efficiently and economically you can meet requirements with high-quality, service-tested U·S·S Carilloy — *a name made famous by performance.*

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH AND CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Carilloy Steels

ELECTRIC FURNACE OR OPEN HEARTH

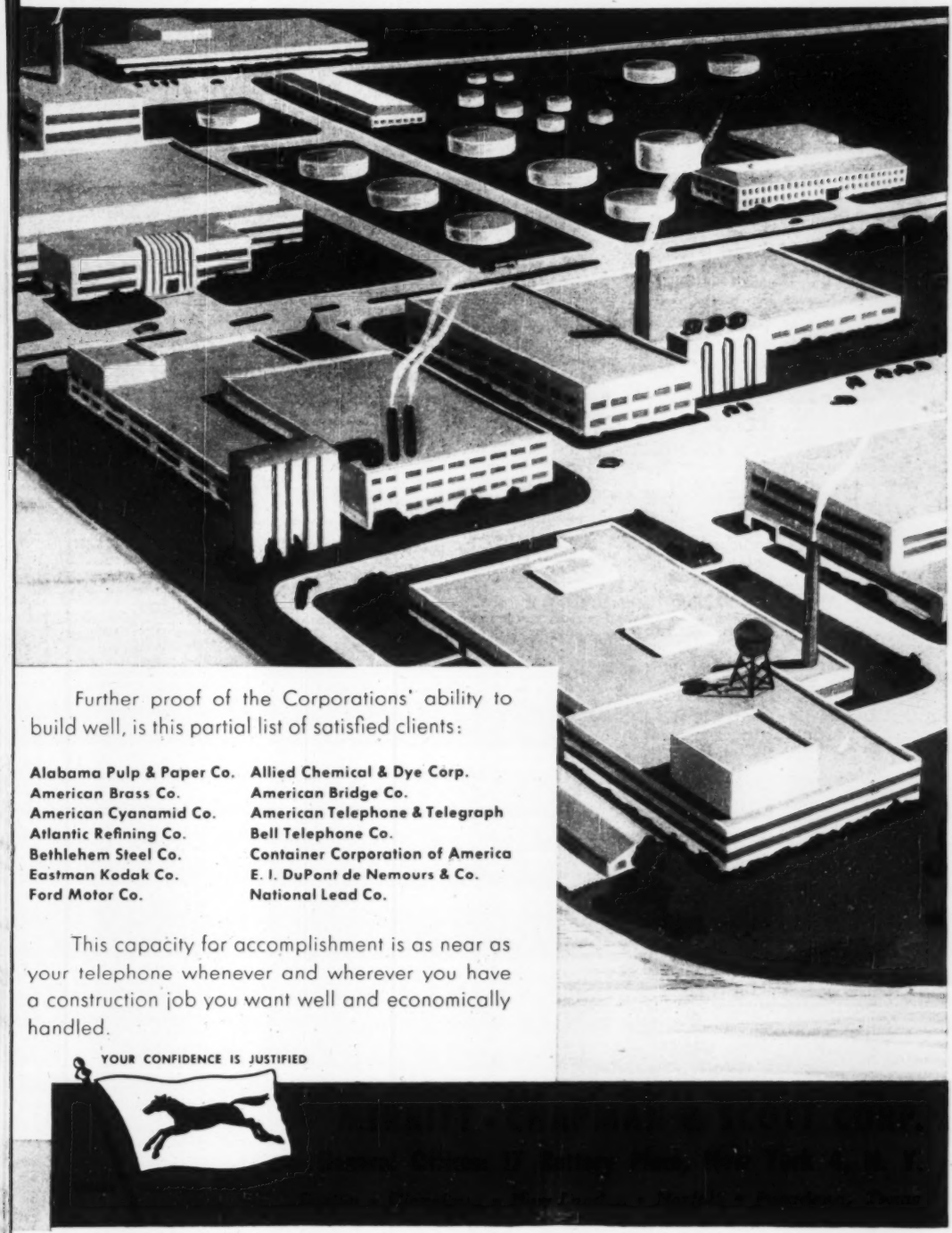
COMPLETE PRODUCTION FACILITIES IN CHICAGO AND PITTSBURGH

9-2050

UNITED STATES STEEL

This isn't any city you know; rather, it represents a cross-section of all the heavy and industrial building done by the Merritt-Chapman & Scott Corporation in the last 10 years. Every bit of construction shown represents a project completed on time, and within the budget appropriated. It also represents rigorous attention to safety codes, and embodies all of the building and mechanical know-how of the Merritt-Chapman & Scott Corporations' long experience in industrial construction.

Work completed or in progress by the Corporation ranges from minor improvements and additions to existing installations to the construction of entire plants. Also included are bridge construction, subaqueous pipe-lines and waterfront installations.



Further proof of the Corporations' ability to build well, is this partial list of satisfied clients:

Alabama Pulp & Paper Co.	**Allied Chemical & Dye Corp.**
American Brass Co.	**American Bridge Co.**
American Cyanamid Co.	**American Telephone & Telegraph**
Atlantic Refining Co.	**Bell Telephone Co.**
Bethlehem Steel Co.	**Container Corporation of America**
Eastman Kodak Co.	**E. I. DuPont de Nemours & Co.**
Ford Motor Co.	**National Lead Co.**

This capacity for accomplishment is as near as your telephone whenever and wherever you have a construction job you want well and economically handled.

YOUR CONFIDENCE IS JUSTIFIED

READER COMMENT

Lower Costs

Sir: The simple little diagram with the two curved arrows and "higher productivity—lower costs" which peeked around the corner of several articles in the October 27 issue tell a lot in little space. A few lines, a few words, a fundamental idea—aimed to reach those who should listen! If that is the beginning of a series, let me wish you all kinds of luck in getting your message across where it will do some good. Heaven knows we need it!

F. T. Mavis, Head
Department of Civil Engineering
Carnegie Institute of Technology
Pittsburgh, Pa.

It is the beginning of a series.—Editor

New Materials—Old Hazards

Sir: With the ever increasing supply of aluminum shapes and sheeting, plus the recent price reductions, this material is finding a host of uses in industry, both for the erection of permanent and temporary structures and windbreaks or screens about athletic fields and outdoor motion picture theaters.

While the material is fire resistant, it is not fireproof because of its comparatively low melting point. Controlled laboratory tests reveal that a particular high grade of aluminum sheeting of 0.032-in. thickness placed in:

a. Vertical position, will flow at 1,320 deg. F., and melt at 1,350 deg. F.

b. Horizontal position, will flow at 1,202 deg. F. and melt at 1,350 deg. F.

Some of the aluminum sheets tested were salvaged from structures, and these had melting points as low as 945 deg. F.

These characteristics thus have some disadvantages that nearly cancel out the benefits, depending on the conditions encountered. As an example: a fire in an aluminum building can be expected to vent itself automatically and speedily at the point of heat concentration, thus removing its own smoke readily enough. However, the draft conditions created would also develop intense air movement to bring the fire almost out of control of plant or volunteer fire forces. Thus the low melting factors can be an advantage only where firefighters are readily at hand as the fire breaks through.

The shapes are also vulnerable to heat and can be expected to sag at about the time the sheeting has failed, especially if the shapes bear much load.

Therefore, in aluminum buildings, non-combustible contents and standpipes or sprinklers are in order.

Myron C. Ziemke
Oak Ridge, Tenn.

Moment Influence Lines

Sir: In view of the very informative paper of Weiner and Singer, "How to Plot Influence Lines Rapidly," (ENR Oct. 6, p. 27) it may be interesting to show how influence lines may also be rapidly determined by an analytical method, assuming a continuous homogenous beam for which the end moments are zero, E and I are constant, and only live and dead loads are considered.

If only a single span is loaded, as is usual in the determination of influence diagrams, it follows from the theorem of three moments that the relationship between the moments of support on the lefthand and righthand sides, respectively, is always invariant, and the moment-zero points (where moment changes from negative to positive line) remain always at the same place, even when the loads within the loaded span are shifted to different points.

The bending moments corresponding to these loads about different points of the unloaded spans can be easily read as geometrical proportions in similar triangles from the slide rule.

To any specified point of the loaded span, the same simple procedure can be applied here. However, both support moments are negative, and the final moment is the sum of the positive moment of the simply supported beam and the negative moment, which may be derived as a geometrical proportion of the difference between the adjacent support moments.

Because of the relationship between moment line and influence line, care must be taken that each bending-moment ordinate is simultaneously a corresponding influence ordinate; e.g., the unit load located in point 2 on the fourth span produces a bending moment v at point 9 on the second span, and at the same time v is the influence ordinate for point 9 on the second span and is to be plotted under point 2 of the fourth span.

When the bending moments about the different points of the structure, respectively, are tabulated in horizontal columns, one by one, it is interesting to see how the same columns show automatically the ordinates of the influence diagrams by vertical reading, all tedious computations for these being avoided.

William Lesser
New York, N. Y.

Did Clay Compress or Shear?

Sir: Your article entitled, "New D. C. Bridge Abutment Settles," (ENR Oct. 27, p. 30) presents several tentative conclusions which are of interest to students of soil mechanics. These conclusions postulate that the settlement is due primarily to consolidation of an underlying layer of compressible clay. Has the possibility that this settlement was caused by lateral displacement toward the river channel been eliminated by analysis of the resistance of that layer? Was the shearing resistance of this clay determined by tests? If so, were the shear values used based on dynamic or rapid shear tests or was the static yield value determined? What was the shearing stress imposed on the supporting mass under the superimposed load of the new fill? The answers to these questions would be of particular interest. While they are unanswered the following comments occur to the writer in connection with this problem.

The situation pictured in the referenced article is quite typical of earth displacements which frequently occur when the definite stability limits of earth masses are not clearly recognized. Perhaps this is another case in which the over-emphasis on consolidation of clay in the modern development of soil mechanics has led engineers to pass over the equally if not more important factor of a definite bearing capacity or shearing resistance which must not be exceeded if true stability is to be achieved. It seems surprising from a theoretical viewpoint that settlement of the magnitude pictured should take place during the relatively short period of time involved in the construction. Ordinarily settlement of such magnitude due to consolidation of clay would require a number of years to develop if the settlement were in fact due to consolidation.

Perhaps of most vital interest is the fact that if the difficulty in the 14th St. Bridge were due to lateral displacement the proposed corrective measures may be inadequate and fail to eliminate future difficulty.

W. S. Housel
Assoc. Professor of Civil Engineering
University of Michigan
Ann Arbor, Mich.

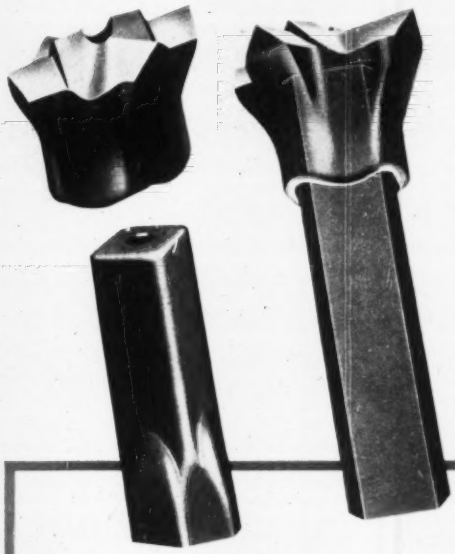
Raymond

Pattern FOR Permanence

52 YEARS FOUNDED 1897 OF PROGRESS

TIMKEN® ANNOUNCES NEW ONE-USE BIT WITH REVOLUTIONARY "*SPIRALOCK*" UNION

Latest addition to the TIMKEN® rock bit line offers unequalled advantages for many operating conditions



For drilling jobs where bit reconditioning is impractical or undesirable, The Timken Roller Bearing Company announces a One-use "Spiralock" rock bit which takes its place alongside the famous Multi-use Threaded Timken rock bit that has been standard in the mining and construction industries for 17 years, and the Carbide-Insert Threaded Timken rock bit introduced more recently.

The new One-use "Spiralock" Timken rock bit offers more advantages than any other rock bit of its type. It has a revolutionary "Spiralock" union, whose superiority has been proved under actual on-the-job conditions. Designed for fast drilling at low cost, the One-use Timken rock bit with "Spiralock" union is made in a variety of types and sizes.

For help in selecting the right bit for your job—whether it's the One-use "Spiralock" Timken rock bit, the Multi-use Threaded Timken rock bit or the Carbide-Insert Threaded Timken rock bit—call upon our rock bit engineering service.

THE TIMKEN ROLLER BEARING COMPANY
CANTON 6, OHIO - Cable Address "TIMROSCO"

1. EASIER TO GET ON AND OFF!
A few blows of the drill and it's on! A few blows of a hammer and it's off! Smooth socket contours assure easy detachability.

2. STAYS ON MORE DEPENDABLY!
New One-use "Spiralock" Timken rock bit has square socket that spirals slightly as it recedes, forming a "Spiralock" union that prevents bit coming off the steel in the hole.

3. NON-CHOKING BACK FACE
Back face is scalloped and rounded-off to prevent chips packing behind bit.

4. MADE OF TIMKEN ELECTRIC FURNACE STEEL
Fast cutting. Long lasting. Uniform quality.

5. NON-RIFLING
The "X" cutting edge of the "Spiralock" bit prevents rifling in any ground.

6. CROWNED CHISEL PILOT
Easier starting and centering.

7. SIMPLIFIES PREPARATION OF DRILL STEELS
Due to "Spiralock" union, steels last much longer —are easier to prepare and recondition. Square steel ends simplify fitting. They may be machined or forged.

8. ANY STEELS CAN BE USED!
Existing drill steels of any size and section can be easily and quickly adapted to the One-use "Spiralock" Timken rock bit.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
ROCK BITS

Your best bet for the best bit for every job.

Carbide Insert Threaded Timken Rock Bit | Multi-use Threaded Timken Rock Bit | One-use Spiralock Timken Rock Bit